DOCUMENT RESUME

ED 200 793 CE 028 597

TITLE The Melwood Manual: A Planning and Operations Manual for Horticultural Training and Work Co-op Programs.

INSTITUTION Melwood Horticultural Training Center, Inc., Upper Marlboro, Md.

SPONS AGENCY Administration on Developmental Disabilities (DHHS), Washington, D.C.

PUB DATE 80

NOTE 266p.: Photographs and some appendix pages will not reproduce well.

EDRS PRICE MF01/PC11 Plus Postage.

DESCRIPTORS Adults; Agricultural Education; Contracts; Cooperative Programs; *Disabilities; Greenhouses; Grounds Keepers; *Horticulture; Job Training; Models; Nursery Workers (Horticulture); Program Administration; Program Descriptions; Program Design; Program Development; Program Guides; *Rehabilitation Programs; Sales Occupations; *Sheltered Workshops; *Therapy; Vocational Education; *Vocational Rehabilitation; Work Experience Programs

ABSTRACT

This manual is intended as a resource for anyone involved in planning, developing, and/or operating a horticultural training or work co-op program for the handicapped. Following an introductory chapter, the manual is divided into three parts with the greatest weight given to the second part. Part I elaborates on development of the horticulture therapy and rehabilitation field and puts into perspective the breadth of the current horticultural programs. Part II consists of the fundamental building blocks of the program. It includes guidelines for leadership, administration, community assessment, funding, personnel, and federal regulations. General training guidelines pertaining to admission, evaluation, and wage determination are also considered. Four program models are described: greenhouse, plant sales, grounds maintenance, and contracting. The greenhouse and grounds maintenance program models are broken down into prevocational training, vocational training, and work co-op operations, and the requisite needs of planning, management, training, business, facilities, equipment, staff, etc., are discussed. Part III briefly presents a history and overview of the Melwood Horticultural Training Center, Inc., to exemplify the models presented earlier. Appendixes, amounting to approximately one-fourth of the manual, include sample personnel job descriptions, universities with horticultural therapy programs, curricula, and training and evaluation. (YLB)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED200793

THE MELWOOD MANUAL

A Planning and Operations Manual for Horticultural Training and Work Co-op Programs

CE 028 597

Funding for this Manual has been provided in part by a grant from the U.S. Department of Health and Human Services, Administration on Developmental Disabilities.

1980

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Earl Copus, Jr.

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

CONTENTS

ix Preface
x Acknowledgments
xi Definition of Terms
1 Chapter One Introduction

2 PART I
HORTICULTURAL THERAPY AND REHABILITATION PROGRAMS IN PERSPECTIVE

3 Chapter Two Horticultural Therapy and Rehabilitation Programs In Perspective
- 3 Historical Development
- 4 Horticulture Defined
- 5 Horticulture as Therapy, Rehabilitation, and Work Co-op
- 5 The Breadth of Horticultural Rehabilitation and Therapy Programs
- 7 Values of a Horticultural Environment

12 PART II
DEVELOPING AND OPERATING
HORTICULTURAL TRAINING, SALES, AND CONTRACTING PROGRAMS

13 SECTION 1
GENERAL ISSUES IN PLANNING
THE HORTICULTURAL TRAINING CENTER

13 Chapter Three Mission

15 Chapter Four Leadership
- 15 Board of Directors
- 20 Chief Executive Officer

21 Chapter Five Assessing Community Need for a Horticultural Program
- 22 Assessing the Population
- 25 Assessing Program Options
- 25 Assessing Employment Opportunities
- 25 Assessing and Avoiding Community Business Confrontation

27 Chapter Six Getting the Horticultural Dollar
- 27 Fundraisers
- 28 Foundations
- 30 Government Agencies
  - 30 County, State, and Regional Departments
  - 31 Federal Sources
    - 34 CETA
    - 35 Community Development Block Grants
    - 35 Surplus Property

37 Chapter Seven Personnel Issues
- 37 Unique Personnel Issues
- 38 In-Service Training
- 39 Key Personnel
- 41 Recruiting Sources

43 **Chapter Eight** **Admission, Evaluation, and Training Placement**
- 43 Referral Sources
- 44 Screening
- 44 Evaluation
- 44 Training Placement

45 **Chapter Nine** **Trainee and Work Co-op Wage Determination**
- 45 Dept. of Labor Regulations and Special Certificates
- 46 Wage and Time Studies

49 **Chapter Ten** **Management Information Systems**

53 **SECTION 2**
GREENHOUSE PRODUCTION MODELS FOR TRAINING AND CO-OP WORK

53 **Chapter Eleven** **Goals in a Greenhouse Program**
- 53 Purposes
- 55 Persons and Disabilities to Be Served
- 56 Self-Earned Income
- 56 Safety

59 **Chapter Twelve** **Prevocational Greenhouse Training Program Design**
- 59 Goal and Objectives
- 59 Curriculum
- 60 Methods
- 61 Evaluation
- 62 Greenhouse Activities
- 62 Greenhouse Space and Equipment
- 62 Staffing
- 63 Trainee Selection and Wages
- 63 Budget

65 **Chapter Thirteen** **Vocational Greenhouse Training Program Design**
- 65 Goal and Objectives
- 65 Curriculum
- 66 Method
- 67 Evaluation
- 70 Greenhouse Activities
- 70 Greenhouse Space and Equipment
- 70 Trainee Selection and Wages
- 71 Budget

73 **Chapter Fourteen** **Greenhouse Work Co-op Employment Program Design**
- 73 Goal and Objectives
- 73 Product Line
- 74 Operational Methods
- 75 Evaluation
- 75 Greenhouse Space and Equipment
- 75 Staffing
- 76 Employee Selection and Wages
- 76 Budget

79 **Chapter Fifteen** **Production and Propagation Systems**
- 79 What to Grow
- 80 How Much to Grow
- 81 How to Grow
- 82 When to Grow

83 **Chapter Sixteen** **Quality Control**

87 **Chapter Seventeen Physical Plant and Technical Requirements**
- 87 Site Location and Acreage
- 87 Size, Type, and Structure of Greenhouse
- 90 Water
- 93 Temperature
- 94 Fuel
- 96 Equipment
- 96 Layout

101 **Chapter Eighteen Greenhouse Sales**
- 101 Developing a Sales Plan
- 102 Sales Models
  - 102 Retail
  - 107 Wholesale
  - 108 Contract Growing
  - 109 Broker
- 109 Pricing
- 112 Inventory
- 112 Advertising
- 114 Vehicles
- 114 Insurance and Licenses
- 114 Public Relations
- 114 Staffing

117 **SECTION 3**
GROUNDS MAINTENANCE TRAINING AND WORK CO-OP MODELS

117 **Chapter Nineteen Defining Grounds Maintenance/Management Programs**
- 117 Goals and Purposes
- 119 Developmental Program Design
- 119 Persons and Disabilities to Be Served
- 120 Tools, Equipment, and Vehicles
- 120 Safety
- 121 Evaluation and Quality Control
- 121 Self-Earned Income
- 122 Mixing Program Goals

123 **Chapter Twenty Grounds Maintenance Prevocational Training Program Design**
- 123 Goal and Objectives
- 123 Curriculum Criteria
- 124 Methods
- 124 Evaluation
- 124 Grounds Maintenance Activities and Contracts
- 125 Tools and Equipment
- 125 Staffing
- 126 Trainee Wages
- 126 Budget

129 **Chapter Twenty-one Grounds Maintenance Vocational Training Program Design**
- 129 Goal and Objectives
- 129 Curriculum Criteria
- 130 Methods
- 130 Evaluation
- 130 Grounds Maintenance Activities

132 Tools and Equipment
132 Staffing
132 Trainee Wages
132 Budget

135 **Chapter Twenty-Two Grounds Maintenance Work Co-op Program Design**

135 Goal and Objectives
136 Factors in Operating a Successful Grounds Maintenance Co-op
136 Administration
136 Financial Management
136 Personnel
138 Physical Plant and Equipment
142 Contracts
143 Professional Resources and Information
144 Budget

147 **Chapter Twenty-three Contracting Model for Grounds Maintenance**

147 Goal
147 The Contracting Plan
150 Contract Marketing Specialist
150 Standard Categories of Contracts
151 Sources of Contracts
153 Marketing Strategies
158 Contract Bidding
161 Bonds

162 **PART III**

163 **Chapter Twenty-four The Melwood Example**

163 Historical Development
164 Melwood Horticultural Center
165 Melwood Farm
165 Melwood Work Co-op
176 Future Development Plans

179 **Bibliography**

APPENDICES

183 1 Staff In-Service Training Opportunities
185 2 Sample Job Descriptions of Key Personnel
191 3 Sources for Staff Recruitment
193 4 Universities in the United States that Have Horticultural Therapy Programs
195 5 Sample Time Studies for Basic Greenhouse Skills
201 6 Melwood Prevocational Curriculum Criteria
217 7 Greenhouse Task Analysis Examples
229 8 Melwood Occupational Sequence Log
239 9 Basic Horticultural Greenhouse Production Schedule
243 10 Sources of Information
245 11 Grounds Maintenance Vocational Skills Curriculum
259 12 National Industries for the Severely Handicapped Regional Offices
261 13 Sample Grounds Maintenance Contract

6

DEDICATION

It is with pride and respect that this Manual is dedicated to the people of Melwood Horticultural Training Center. The trainees, graduates, staff, board and friends are responsible for Melwood's successful pioneering and professional pacesetting efforts.

Horticultural programming and employment for the handicapped person works. We appreciate the opportunity to be a part of the expanding, worldwide endeavors to utilize horticultural environments for therapeutic, rehabilitation and employment potential.

Earl Copus, Jr.

PREFACE

Parents and friends of mentally retarded young adults founded the Melwood Horticultural Training Center in 1963 as a new direction in training and employment of retarded individuals. The founders not only were capitalizing on their own professional horticultural talents but also were trailblazing in the field of horticulture for handicapped persons. As Melwood expanded its operations into extensive grounds management and large-scale plant production, an increasing number of professional and lay visitors came and continue to come to study the program and request development and operational advice.

During this period, 1963-1980, several significant occurrences further documented the need for a basic, how-to horticultural program development and operations manual. First of all, federal agencies funded a growing number of horticultural demonstration and program expansion projects across the country. Educational institutions of higher learning, responding to student interest, developed curricula preparing graduates to meet the personnel needs of the rapidly emerging horticultural therapy and rehabilitation profession. A National Council for Therapy and Rehabilitation through Horticulture was founded to coordinate and support the expansion of its organizational, professional, and lay membership. Finally, financial pressures during the 1970s forced many organizations to examine the self-earned income potential of the horticultural industry.

Books and articles have begun to be available about innovative horticultural centers and about specialized funding. An abundance of technical botanical information about the requirements for greenhouse and grounds management operations is available from professional texts and journals, university and extension agents, and private horticultural industry representatives.

Until now, however, there has been available little or no information which attempted to set forth basic, how-to steps for formulating and managing a horticultural rehabilitation and income-producing program. Melwood now meets this need with the publication of this manual.

It is hoped that this manual may provide a valuable resource for the development of new programs and for the improvement and expansion of current activities. The natural catalyst present in association with the greater horticultural environment already has proven its worth for hundreds of disabled and disadvantaged individuals. It remains for this catalyst to be utilized more broadly and effectively with the ultimate goal of assisting handicapped individuals to become productive, valued members of our society.

ACKNOWLEDGMENTS

Many persons contributed to the publication of this Manual.

Melwood's Executive Director, Earl Copus, recognized a need, provided the creative impetus, and served as project director responsible for the content, style, and publication of the Manual. To bring his idea to fruition, Mr. Copus obtained the support of Francis Lynch, Director, Developmental Disabilities Office, U.S. Department of Health and Human Services, whose office provided funding for the project.

Those who made major contributions toward the Manual's contents are:

John L. Hudak, Jr.
writer, researcher

Daniel J. Vessel
photographer

Duskey Mallory
writer, editor

Myra Sides Copus
artist

Those who served as resource persons are:

Richard F. Barnard
Director, Melwood
Prince George's County Programs

Warren Meny
Marketing Manager
Melwood Center

Linda Nakosteen
Greenhouse Manager
Melwood Farm

Diane Siepiela
Training Coordinator
Melwood Farm

Robie Williams
Supervisor
Melwood Greenways

Daniel D. Pearce
Director, Melwood
Charles County Programs

Barbara Warren Kesser
Greenhouse Manager
Melwood Center

Robert M. Hoffman
Training Coordinator
Melwood Center

Jack D. Smith
Administrative Manager
Melwood Greenways

E. D. C. Bartlett
Marketing Consultant
Bartlett & Barker, Inc.

E. C. Geiger
Horticultural Supply Company

DEFINITION OF TERMS

The following words are used in the Manual in the particular context of rehabilitation through horticulture and are defined here to insure clarity and understanding.

bench. The structure in the greenhouse on which plants are placed to grow and develop. Benches may be of various designs, sizes, heights, and materials.

building sale. A retail plant sale held in a large public or private office building, usually in the lobby or other location convenient and accessible to a large volume of employees and passersby.

buying in. The technique of purchasing cuttings or plants for resale. The plants might be ready for immediate resale or need repotting and additional growing time. Cuttings are bought in to be rooted and grown into finished products.

crew. The group of persons receiving vocational training as a class with one or more assigned instructors (training crew). Also, the group of co-op workers who are employed to do greenhouse production or grounds maintenance work (production crew, grounds crew).

curriculum. The criteria or objectives, from least difficult to most difficult, in personal behavior and skill development upon which a training program is based. Not a "course of study" in the usual sense of academic knowledge, it rather is a set of skills to be learned and mastered.

down time. The winter months when there is less grounds maintenance and landscaping work to be done.

finishing off. The final growth of cuttings or plants prior to sale; the final period in which the plant develops into a sellable product.

flat. A tray-type container, usually of wood or plastic, which commonly is used to move plants from one area to another.

foreman. A crew foreman is the staff person in charge of a work co-op crew (as contrasted with an instructor who supervises a training crew).

groundsman. A grounds maintenance co-op employee; member of a grounds maintenance crew.

grounds maintenance/management. The professional field of total maintenance/management of all aspects of grounds care, including soil, grass, flowers, shrubs, trees.

IPP. Individual Program Plan or Individual Prescriptive Plan; also known as an IDP or IEP. The plan of development for a person, charting individualized training goals and showing step-by-step objectives within established time frames.

ITM. Interdisciplinary meeting. A meeting of staff members, representing the areas of work adjustment, Activities of Daily Living, social and recreational, residential, and support services, for the purpose of formulating trainee goals and of evaluation.

NCTRH. The National Council for Therapy and Rehabilitation through Horticulture.

product line. The selection of products (plants) which will be grown and offered for sale in keeping with the marketing plan.

rehabilitation. The process of training a person to live as normally as possible in the community and to be a work-contributing member of that community. Rehabilitation includes vocational, behavioral, and social training to assist individuals to reach their maximum employment potential.

sheltered workshop. A place of employment for handicapped individuals who are not ready to hold competitive jobs in the community. It is licensed by the U.S. Department of Labor to pay wages based on productivity, not according to the minimum wage. In place of the term "sheltered workshop" which is felt to have devaluative connotations, the Manual substitutes the term "work co-op."

therapy. Prescribed treatment for a person who is or has been ill or injured to assist that person to reenter the mainstream of society. The term comes from programs based on medical models.

trainee. A person enrolled in a rehabilitation program and who is being trained in employment skills. Often called a "client" in some programs.

work co-op. A business which employs handicapped workers. Employment is on an indefinite basis or continues until work experience and increased productivity allow the workers to go into competitive jobs in the community. As the word "co-op" infers, a worker gains (wages) from the job what he or she invests in it (time and work skills).

Chapter One

INTRODUCTION

This Manual should be of value to anyone involved in planning and/or operating a horticultural program for the handicapped. In particular, it should be of special use to project directors, members of boards of directors or advisory boards, and professional horticulturists embarking upon a horticultural training or work co-op program. Individual instructors or leaders of ongoing projects will find the material valuable for recasting an activity or therapy oriented program into a vocational program based on the principles and functions of the business world.

The Manual is divided into three parts with the greatest weight given to the second part. Part I elaborates on the development of the horticultural therapy and rehabilitation field and puts into some perspective the breadth of current horticultural programs.

Part II consists of the fundamental building blocks of a horticultural training or work co-op program. Included are guidelines for leadership, administration, community assessment, funding, personnel, and federal regulations. Also included are general training guidelines pertaining to admission, evaluation, and wage determination.

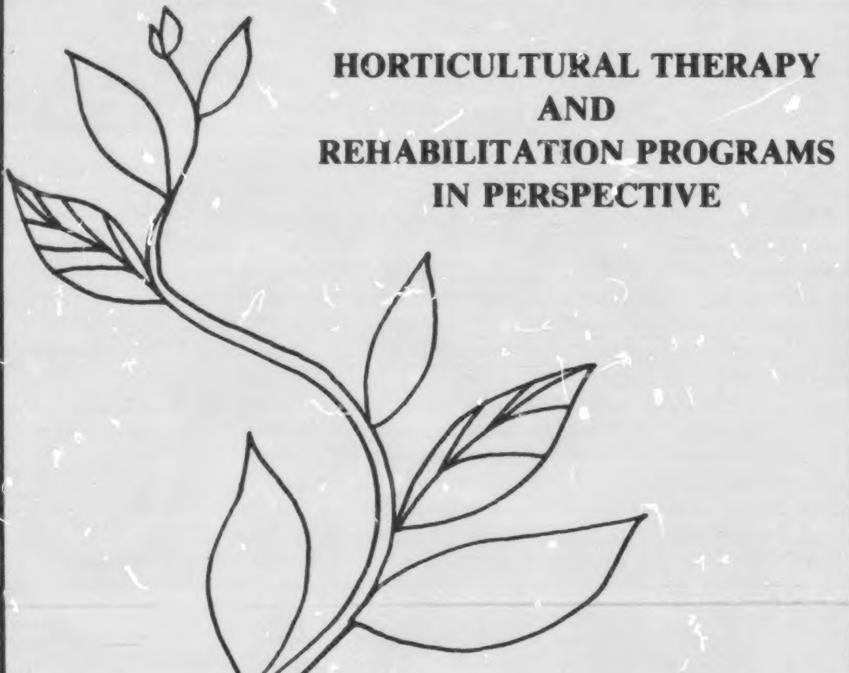
The four program models described in Part II are the greenhouse model, plant sales model, grounds maintenance model, and contracting model. The greenhouse and grounds maintenance program models each are broken down into prevocational training, vocational training, and work co-op operations, and the requisite needs of planning, management, training, business, facilities, equipment, staff, etc., are discussed. This information may help planners choose one option over another in their initial planning. Most of these units could be initiated independently and enlarged as needed, depending upon resources available or other contingencies.

Part III briefly presents a history and overview of the Melwood Horticultural Training Center, Inc. in order to exemplify the models presented earlier in the book. Included throughout the Manual and at the end are numerous resources. Among these are references to funding sources, universities and colleges offering horticultural therapy programs, personnel hiring sources and job descriptions, curricula, training and evaluation, government regulations, and a limited horticultural rehabilitation/therapy bibliography with sources for expanded reading.

As is true of any training program for the handicapped, other support services must be involved in the horticultural training center. These include counseling, generic service outreach, remedial educative work, and activities of daily living. Since these are not unique to the horticultural training center, their general implementation is not examined in the Manual.

PART I

HORTICULTURAL THERAPY AND REHABILITATION PROGRAMS IN PERSPECTIVE



Chapter Two

HORTICULTURAL THERAPY AND REHABILITATION PROGRAMS IN PERSPECTIVE

Historical Development[1]

Man's association with the therapeutic influence of plants and herbs dates back at least to ancient Egyptian times when physicians prescribed walks in the gardens for some disturbed patients. In the United States, it was a common custom for the mental institutions of the 18th century to employ patients in the growing and harvesting of crops on the farmland of the institutions. Dr. Benjamin Rush, a signer of the Declaration of Independence and professor at the Institute of Medicine and Clinical Practice in Philadelphia, acknowledged the contribution of field labor to the alleviation of madness in one of his patients. In 1879, the first known greenhouse for use with the mentally ill was built by Pennsylvania's Friends Asylum for the Insane (today known as Friends Hospital). During the same era, Michigan's Pontiac State Hospital utilized portions of its 300 acres of farmland for patients' treatment. In 1899, E. R. Johnson cited the value of gardening in working with mentally handicapped children.

After the turn of the century, Friends Hospital expanded its use of horticulture with the construction of a large conservatory and two additional greenhouses. Bloomingdale Hospital in White Plains, New York, and Kankakee State Hospital in Illinois also added horticultural programs in gardening instruction for patients. More pronounced growth of horticulture as therapy in the United States came following World War II. With the establishment of the veterans hospitals, volunteers and members of the National Council of State Garden Clubs engaged the recovering soldiers in a variety of plant, flower, and garden-related projects. In the 1950s, Dr. Karl Menninger, at the Winter V.A. Hospital in Topeka, Kansas, gave wholehearted support for the patients' involvement in greenhouse operations and later established this activity as part of the patients' treatment at the Menninger Clinic.

The first workshops in horticultural therapy were presented by Dr. Donald Watson and Alice Burlingame, a psychiatric social worker, at Michigan State University. The workshops explored the psychiatric aspect of the horticultural work that volunteers were doing throughout the various hospitals. In 1955,

---

[1] This historical picture is drawn largely from a talk delivered by Charles Lewis at the 1976 NCTRH Conference.

Michigan State University awarded its first Master of Science degree in horticulture therapy to Genevieve Jonas. Another milestone was reached when the Institute for Rehabilitation Medicine at New York University Medical Center opened a horticultural therapy greenhouse in 1959. Here, Dr. Howard Rusk, Institute Director, intertwined the use of horticulture with the complete treatment program for physically disabled patients who were victims of strokes, industrial accidents, spinal cord injuries, and other disabilities. The decade of the sixties saw numerous universities increasing their course offerings to train individuals for the professional field by now known as "horticultural therapy."

As both service and academic programs increased, the need for a formal organization was felt. In April 1973, 20 involved professionals met in Upper Marlboro, Maryland, to form the National Council for Therapy and Rehabilitation through Horticulture (NCTRH). In one year the organization grew to 335 members in 40 states, Canada, and England. The Council began publication of a newsletter and assisted in presentations of numerous regional workshops. It since has instituted a peer group review of qualifications to provide standards for professional entrants into the field and has created a job bank to facilitate placement of qualified applicants. The National Council has provided technical assistance to professionals, students, and volunteers and through grants has undertaken several studies of the horticultural field (see Bibliography).

The profession has grown with the multiplication of both undergraduate and graduate programs in universities throughout the United States. Kansas State, Clemson, and Michigan State Universities are examples of universities having excellent curricula. Service programs as diverse as correctional facilities, alcohol rehabilitation centers, training centers, and work co-ops for the physically handicapped, mentally retarded, blind, and other disabilities have begun using horticulture, tailoring it to fit the needs of their varied populations and unique geographical or social contexts.

Horticulture Defined

With the tracks of history behind us and a variety of programs already existing, one can ask justifiably, what does horticultural therapy and rehabilitation involve? How does horticulture distinguish itself from agriculture and from botany as both a profession and a science? And when is it properly called therapy or rehabilitation?

Bailey, in his *Standard Cyclopedia of Horticulture* (1963), defines horticulture simply as "the growing of flowers, fruits, and vegetables, and of plants for ornament and fancy." However, he adds that the practice as well as the science of horticulture includes "all questions of plant breeding, variation of plants under domestication, the bearings and applications of many biological and physical sciences, and the manufacture of many products. Primarily, horticulture is an art, but it is intimately connected with science at every point." Thus, the lines between horticulture, agriculture, and botany are not, in fact, clearly drawn.

Horticulture as Therapy, Rehabilitation, and Work Co-op

There have developed some important differences in how therapy, rehabilitation, and work co-op programs employ horticulture—differences having to do with staffing focus, program design, and program goals.

Therapy

The word "therapy" is often associated with medical programs which are predominantly involved in the treatment of someone who is ill or has been injured. The therapeutic treatment team consists of doctors, psychiatrists, psychologists, occupational therapists, etc. Usually, the persons treated are referred to as patients or clients. The therapeutic environment represents a more controlled situation having capabilities to increase and/or decrease conditions as necessary to be an effective part of the prescribed treatment plan. The overall holistic goal is one of assisting an individual to become capable of reintegration into society's mainstream.

Rehabilitation

Although both the therapeutic and rehabilitation fields make valid and effective use of horticulture, this manual describes and applies the use of horticulture primarily for rehabilitation in programs which include prevocational and vocational training and work co-op programs. The rehabilitation program employs a team made up predominantly of work evaluators, vocational skill instructors, behavioral specialists, plant production and sales personnel, and contract marketing and grounds maintenance specialists. The persons served, called "trainees" or "workers," basically need personal work adjustment, vocational skill training, and employment opportunities. The training environment is based on one or more of the horticultural business models and has few, if any, controlled elements. The overall goal is to assist individuals to reach their maximum work potential and to enter into successful employment, whether sheltered or competitive. The natural pressures, demands, and the personal, group, and financial rewards of the business training model result in special strengths impossible to obtain from most other designs.

Work Co-op

The work co-op (sheltered) model employs a team of work foremen (versus instructors) and other technical and marking business positions which meet its particular design. Because its workers are "handicapped," the work co-op model does place special emphasis on its personnel department. However, even though this unit is sensitive to and supportive of special personal needs of its work force, it does not function as a rehabiliation element. The sole goal of the work co-op is to be successful as a competitive business employing handicapped workers.

The Breadth of Horticultural Rehabilitation and Therapy Programs

The diversity of horticultural therapy and rehabilitation programs can be demonstrated with a small sampling of existing programs. One of the most widely known therapeutic facilities is the Menninger Clinic in Topeka, Kansas.

17

The Clinic is affiliated with the C. F. Menninger Memorial Hospital which serves emotionally disabled individuals of all ages. Both inpatients and day patients have an opportunity to spend from an hour to five hours weekly in one of the horticultural or related programs which take place in two greenhouses or in one of the many outside flower gardens or vegetable gardens. A horticultural therapist works with the patient's physician in a cooperative effort toward returning the individual to active use of his time, enhancing self-esteem, and alleviating depression. Because the hospital is a private psychiatric treatment center, the costs of operation, supplies, and staff are included in the costs of hospitalization.

At the Vocational Ornamental Horticulture Program in the Union Correctional Institution at Raiford, Florida, about 75 adult inmates work toward a Vocational Certificate from the State Department of Education through 2,000 hours of classroom instruction and on-the-job training in greenhouses or on the institution grounds. The program is conducted by two professional horticultural specialists, and both state general revenue funds and federal funds for the disadvantaged have helped operate the program. The program is oriented to teaching job skills, and, with the assistance of the Florida Nurserymen and Growers Association, many inmates, upon release, have been employed in nursery operations as crew leaders or laborers and even have become owners and operators. The products of the inmates' labor are placed in state buildings rather than sold in competition with area businesses.

One facility that operates as a business is the Pittsburgh Council House's Root and Leaf Greenhouse. The Pittsburgh Council also manages a greenhouse program at Woodville State Hospital. Work adjustment rather than skill training is the primary goal for their enrollees, yet, according to the literature, the program has become a major wholesaler in the region and the second largest "dish garden" distributor in the county. Training funds have been provided by the Pennsylvania Bureau of Vocational Rehabilitation, and professional horticulturists and skilled mental health or mental retardation personnel make up the majority of the staff. Approximately 20 adult psychiatric trainees are served in the greenhouse and sales outlets at any given time.

Public schools have begun to use horticultural programs in teaching retarded and disadvantaged students. The Laurel Ruff Center of the San Juan Unified School District in Sacramento, California, for example, employs crews of four to six young persons for training and work in such areas as the cleanup of recreational facilities, lawn maintenance, weeding, and trash removal.

An innovative horticultural training program which is also a successful business is the Carlsbad ARC Farm in Carlsbad, New Mexico. From four mentally retarded trainees and a 3,000 square foot greenhouse with plants sold on the retail market, the program has expanded to serve 17 trainees with 6,000 square feet of greenhouse space plus farm activities which include growing pecans. The business aspect has changed, too. Now, wholesale sales serve the area's commercial market with small plants which sell quickly and ensure a constant demand for high production. This production atmosphere sets the tone for a real work environment which results in a better training program. Perhaps more unique is the Farm's plant rental service used by area offices. Highly successful, both programmatically and financially, the service calls for trainees to go into the community where they gain additional benefits from this normalizing experience.

A final horticultural program example is the Sunland Center in Marianna, Florida. Recognized as innovative and highly successful, it is one of several Florida "Sunland" residential facilities serving developmentally disabled persons. Kenneth Stoutamire, Director of Vocational Programs at the northern Florida center, has developed a horticultural therapy and rehabilitation program which incorporates the five areas of nursery, garden, greenhouse, orchard, and nature program. With its excellent community involvement, Sunland Center exemplifies what can be accomplished with limited resources, good ideas, and ample determination.

Values of a Horticultural Environment

The success of the use of horticulture in so many diverse settings can largely be attributed to the natural, built-in values to be found in the greater horticultural environment. Following are described some of the most important of those values from which individuals and programs can benefit.

- **The Societal Value**

Society places a value on the beauty of plants and well-landscaped grounds. This natural attraction of people to plants transfers to the persons working with plants and places upon them a value not always associated with less creative, assembly line work often found in industrial employment. For the mentally ill, the mentally retarded, the physically handicapped—for every person, to be valued is essential.

- **The People-Plant Value**

Each person needs to feel needed. The living plant is dependent in many ways upon the person giving it care. This care-giving role reverses the usual dependent role experienced by a handicapped person and engenders competence, personal growth, and enhanced self-esteem.

- **The Program Options Value**

Almost regardless of the location — inner city, suburban, or rural — some form of horticultural activity can be adapted to meet the goals of most therapy and rehabilitation programs. Likewise, there exists a range of financial options, from operating on a severely restricted budget to utilizing unlimited funds.

As a training and work co-op activity, the horticultural setting offers certain unique opportunities, such as a continuum of simple to complex tasks, possibilities for problem solving, communication, decision making, and the potential to teach responsibility, productivity, and specific job skills for competitive employment.

- **The Community Integration Value**

All programs need, at some level, to integrate individuals into the everyday community lifestreams. Horticulture again offers many natural

•

An annual community open house fosters good public relations, provides community exposure for trainees, raises funds for the training program, and creates future potential plant sale customers.

•

avenues — plant sales, community on-the-job training and grounds maintenance contracts, participation in local special events — which enable persons to flow into and become part of community life. These opportunities for community integration foster adult peer relationships and social adjustment and enable the trainee to see the product of his or her labor being valued by the community.

- **The Public Relations Value**

Horticulture provides almost endless opportunities to show and tell. From participation in seasonal community events to highlighting on-the-job projects, good human interest stories exist. Often, even if the program's staff members do not take the initiative, the news media will seek out and tell the story for you. There is something special and continually newsworthy about the people-plant relationship.

- **The Self-Earning Power Value**

With programs today fighting to maintain their financial soundness, it becomes necessary for programs to generate self-earned funds. The horticultural environment offers a number of opportunities, from a one-time plant sale to an ongoing wholesale or retail product marketing program or grounds maintenance contracts, in which significant self-earned dollars are possible.

Advantages and Disadvantages of the Horticultural Business Environment

The greatest advantage of a horticultural program which incorporates a business element is the impact on the trainee of being in the real world of work. The pressures of deadlines, quotas, productivity-related wages, and weekly paychecks — all part of the normal world — motivate a person to use all the concentration and ability which can be mustered. This motivation is often the very thing that is missing from purely nonwork therapeutic or rehabilitative training programs. Self-motivation is reinforced when trainees see the purchase of products or services which they produced, and this, too, is germane to the normal, workaday world.

A second compelling advantage in establishing the horticultural program as a business is the opportunity to generate a portion of the budgeted income as a supplement to other funds. While programs for the handicapped have enjoyed a recent increase in support funding, such dollars normally depend on the vagaries of politics, taxcutting movements, fluctuations in the economy, and other pressures affecting allocation of monies. The fact that handicapped persons can be taught to be productive supports the movement toward creating environments that allow them to be so.

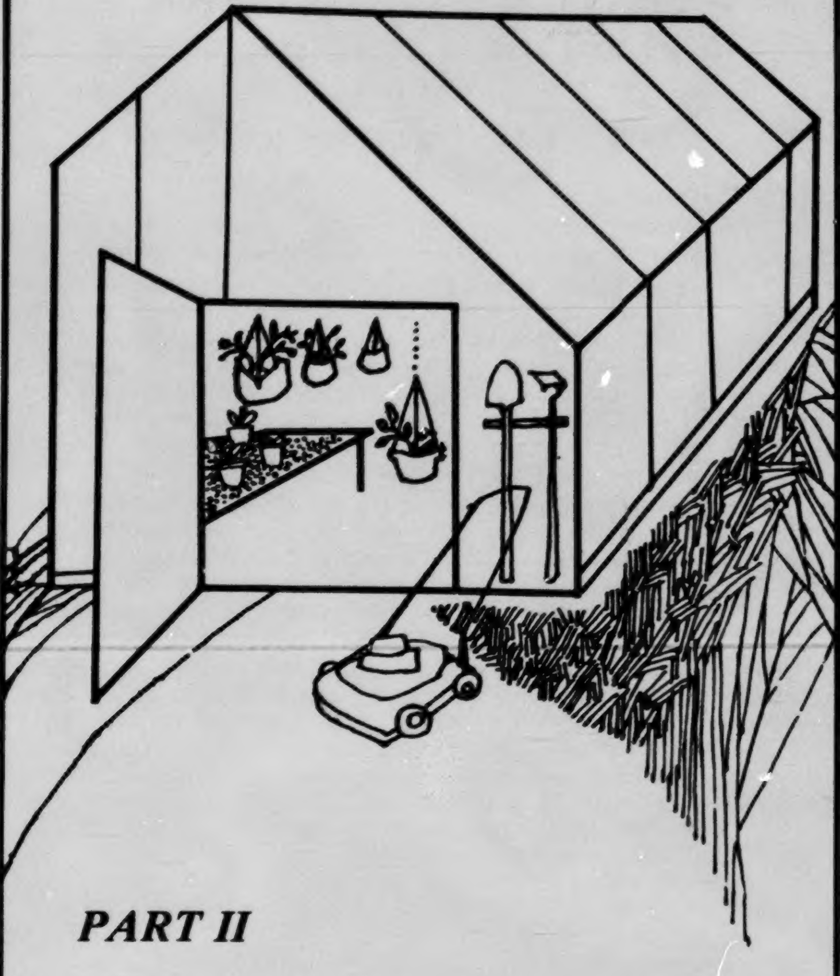
As great as are the advantages of the business element as part of the horticultural rehabilitation program, there are disadvantages, too. In any business, one can lose sight of the original goals, and horticulture is no exception. But this is a particular danger because of the vulnerable position of the handicapped trainees. Not only might their labor be taken advantage of, but the demands of producing black ink constantly threaten the goals of training and rehabilitation. Let no one be fooled about this hazard. The demand to finish acres of lawn mowing or to complete several hundred repottings can work toward pushing the trainee aside in favor of more skilled labor (usually the staff's) and can block the time and patience needed for step-by-step teaching and learning.

Another risk in the business element is the same as found in any financial venture: there are no guarantees of success. There are no promises of federal, community, or other forms of assistance. There are few, if any, tolerances for being a work co-op. There are no exemptions from natural disasters such as breakdowns of the heating or watering systems which cause the loss of hundreds of plants. These are the realities of the competitive world.

In addition, work co-ops and training centers, by their nature, necessarily operate at a lower than 100 percent efficiency rate. Full competitive productivity is generally unrealistic. The crux of the problem is how to maintain training at the minimal expense of productivity while avoiding the development of productivity at the expense of training. Given these considerations, it is the contention of this Manual — and of a growing number of programs for rehabilitation through horticulture — that the advantages outweigh the disadvantages of the business approach. Other advantages, such as the wide range of costs and options, will be mentioned throughout Part II.

Perhaps the greatest advantage of horticulture, whether used for therapy or for rehabilitation, is that it works. It provides an environment which promotes success and the growth of the persons involved. And that is the goal of everyone — administrator, instructor, trainee, worker — who is involved in therapy, rehabilitation, and work co-ops through horticulture.

But *how* does it work? What are the pieces which must be created, shaped, put together in order to result in the desired horticultural program? This is the information described in detail in Part II which follows.



PART II

DEVELOPING AND OPERATING HORTICULTURAL TRAINING, SALES, AND CONTRACTING PROGRAMS

DEVELOPING AND OPERATING HORTICULTURAL TRAINING, SALES, AND CONTRACTING PROGRAMS

A horticultural training and/or work co-op program offers numerous rehabilitation and employment benefits to handicapped individuals. There seem to be inherent advantages derived from working with living matter that help improve an individual's self-esteem, responsibility, and work productivity.

However, it is the commercial environment emphasizing realistic working conditions which maximizes the development of individuals' employability, prepares them for job opportunities, and ultimately results in their optimally normalized lives. Operating the horticultural center on a business standard multiplies these assets so that enrollees are practicing an experience closest to competitive employment that is possible while they are in training.

Part II of the Manual is divided into three sections which give direction for setting up the components of a horticultural program which addresses the needs of a training and/or work co-op operation. The first section addresses general issues of the horticultural field which are pertinent to its nature as a rehabilitation and a business program. These issues include leadership, sustained financial resources, and a stable and effective administration.

The second and third sections detail the greenhouse, grounds maintenance, sales, and contracting model programs of horticulture and key requirements for each. Outlined for each model will be the evaluation criteria for programs, necessary staff, technical information or requirements, finances, and special considerations. By describing the horticultural environment in terms of several models and stressing the basic components which apply to the special populations to be served, it is hoped that program planners can choose to begin in any one of a number of different approaches or at various levels of involvement. Thus, this part of the Manual alerts planners to hurdles to be overcome within each model and provides helpful guidelines to review when organizing such a program.

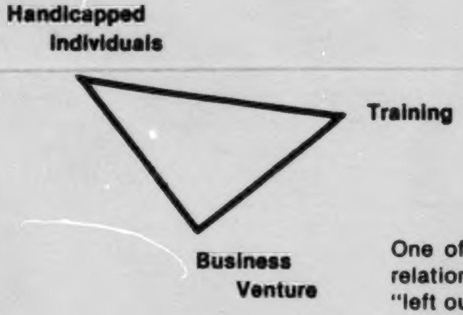
The Manual does not intend to serve as a complete text for greenhouse management nor for grounds maintenance, and it cannot substitute for wise judgment, local contacts, and professional expertise, since regional differences and personal preferences must be respected. Such unique circumstances as climate, market, or population demand on-the-spot deliberation. There are various approaches to propagation and production that differ in philosophy and that must be considered within their own context. This multiplicity of methods only highlights again the need for experienced individuals in the principal positions. Without prescribing all the details of any specific program, the recommendations given here are intended to provide a basic outline for the components that make up the horticultural training center operated as a business.

Chapter Three

MISSION

The mission of the horticultural training project is more than a statement of goals and objectives. It must be used as a standard according to which a program is designed and decisions are made and around which the components of training, business, and horticulture are organized. Clearly determining the role of the business approach alongside training and other instrumental programs, such as residential or supportive services, establishes the norms for deciding policy and procedures. The mission of the horticultural training center is of paramount importance because of the tripartite balance among business, training, and individuals who are in some manner handicapped.

BALANCING THE TRIANGLE



One of the hazards of any triangular relationship is that someone may be "left out".

Succintly put, for what purpose does your horticultural training center exist: to serve a certain population? to make money? to employ the handicapped? to train them vocationally? to occuppy their day actively and/or productively? Or is it a combination of the above?

If the population to be served is not adequately defined, will such a broad range of clients be involved that the talents of even the most expert instructor will be stretched? Have you taken into account how an array of disabilities *differentially* affect training limits and expectations when the individuals are combined?

How central is training to your mission? What do you expect of training and how do you expect training to be carried out with your given population? It is not unheard of that work co-ops often utilize a direct client-staff ratio of

20:1, or that some centers mask their ratio figures by including administrative or noninstructor staff in the accounting. This may be appropriate for some populations, or appropriate for budgeting procedures, but it is not advisable for purposes of planning a horticultural training program. For a population of retarded adults, for example, if greenhouse training is central to the mission of the program, a maximum of 10 trainees to 1 instructor is recommended. In a grounds maintenance work co-op, a maximum of 5 or 6 workers to 1 foreman is necessary.

Is it part of the mission that trainees are to be productive rather than that they be active? If so, a very significant adaption is demanded in horticultural programming, whether it be in greenhouse or grounds maintenance. An attitude of carelessness around equipment, wasting of time, or excuse-giving is considerably less tolerated in a program whose mission is productivity.

"Who is the center serving?" and "for what purpose?" are intertwined questions to be answered before one decides to embark on the business approach. These questions have ramifications for the clientele, administrators, and front line instructors of a program. Since potentially conflicting expectations may arise from the triangulated concerns of a handicapped population, training, and a business operation, the responses must be clear for consistency to be developed. This process, in all honesty, only takes place over time but must be acknowledged from the start.

Who formulates the mission of a program? Most certainly not a single individual working alone. It is important that a broad base of individuals contribute to its formulation, persons who will take responsibility for establishing the horticultural project, such as prospective members of the board of directors or advisory board, participants in local advocacy organizations, community representatives of referral agencies, and, most important, representatives of the horticultural business community. In this way, the concept of each program develops from a working consensus and the actual design gains a broaded understanding and acceptance within the community. Concerns for the training role, finances, and business pressures can be articulated and precedents for measuring decisions against the mission statement can be established. Later, as staff members are selected, and then again as they participate in the functioning of the program, the mission of the center serves as the organizing principle for their decision/making.

Finally, the mission will serve as a focus on the founding purpose of the organization as, through the years, administrators, members of the board of directors, and staff come and go.

Chapter Four

LEADERSHIP

Whether a program planner is developing a new training center or is converting an activity center into a training and business program, the leadership of that center is crucial. And while leadership itself may be an intangible entity, there is little doubt that a center's board of directors and its chief executive officer together form the basis for effective leadership. In the case of a rehabilitation center that is branching out into a horticultural program and already has a functioning board of directors, an advisory committee may substitute in the consultative role described here.

Board of Directors

Boards of directors often have been viewed as rubber stamps or as necessary evils. The reality is, however, that the board of directors (but not necessarily an advisory group) of a corporation, profit or not-for-profit, ultimately holds legal responsibility in most states for the conduct and liability of the organization. More pertinent to the issue here is the makeup of the board which will enable the board members to be uniquely helpful in a horticultural program.

Of first importance are members (preferably more than one) who are familiar with the horticultural industry. The horticultural professional on a board's finance committee, for example, is more likely to be acquainted with the costs involved with equipment and repairs. He or she might know the salary scales for professionals in the surrounding area. Such a person can advise the center regarding reliable suppliers of equipment and materials, may be aware of the financing practices and problems of the industry, and would be able to translate some of the business demands of horticulture into lay terms.

A member of the Society of American Florists or the Allied Florists Association on the board's marketing committee may prevent confrontations with local florists or greenhouse owners over competitive markets or pricing. A person in the horticultural business would already know the perspectives of fellow retailers who might look fearfully and angrily at a project partially subsidized by taxpayers' funds that also is selling commodities on the open market. The professional from the community also could give counsel on what products to market and when to market in a given area.

Board and advisory board members may provide convenient access to other technical information. From members of the state's agricultural department, natural resources department, or extension service, the horticultural program can gain information about climate, water, soil, native insects, and other potential liabilities of the locale. A university horticultural faculty member may be able to assist with placing student interns, recommending qualified employees, and writing suitable job descriptions. Businessmen of the related professions usually are aware of the job market and of resources for recruiting capable individuals. Knowing the value of entering flower shows, of attending certain conventions and conferences, and of joining the professional associations would be another asset in having horticultural professionals on the board.

Equally as important as the technical help which board members can provide is assistance available from a person in the financial profession, i.e., a banker, CPA, or accountant. Solid advice in budgets and planning and fiscal management and a firm grasp of monetary principles is absolutely necessary if the horticultural program is to be established on a firm financial basis and is to continue operating successfully.

Whenever possible, the project wants to attract to its board membership persons who are leaders in their professions, such as the chairman of a university department, the head or deputy of a state division, or the chief extension agent of the county. These persons have demonstrated a commitment to their profession and would bring extensive knowledge, community contacts, and prestige to the fledgling operation or ongoing program.

Of course, the entire board of directors or advisory board would not consist of horticulturally-related professionals. Individuals from other sectors of the community also provide an expertise and a community balance that is necessary in governing the project and advising the executive officer. Members should be chosen for their competence, their identity with the community to be served, and the contingency of adequate time for performing their duties. A thorough orientation to board responsibility should be provided.

The following is a list of sources from which board members might be invited.

Horticulturally-Related Persons in Your Community

1. Professional Associations
    - Society of American Florists
    - Allied Florists Association
    - American Nurserymen's Association
    - Professional Grounds Management Association

2. Representatives of the Horticultural Industry in Your Community
    - Florists
    - Nursery owners and operators
    - Growers
    - Grounds management owners and managers

3. University Departments
    - Horticulture
    - Agriculture
    - Botany

4. County Extension Agent

5. Private or Public Facilities: Directors and Division Heads
    - Arboretums
    - Botanic Gardens
    - Conservatories
    - Park Service

6. Local Groups, for example:
    - Beautification Committees
    - Environmental Committees

7. Garden Clubs

Community-Related Individuals and Organizations

1. Parents
2. Local advocacy group for the handicappped population served
3. City, county, or other government executives, especially health and social services
4. State vocational rehabilitation professionals
5. School system officials and professionals
6. Commerce, i.e., banks, business, real estate
7. Legal and political representatives

It is important that a board of directors oversee and guide the total operation of the horticultural project, regardless of the nature of any program element they support. Two rating scales developed by the University of San Francisco are reproduced in Figures 1 and 2 to identify the effectiveness and accountability of board members.

FIGURE 1 — RATING SCALE

The self-rating scale for the board of directors is introduced as a non-threatening way of helping boards to monitor their own effectiveness. It suggests that the board must be accountable, just as it holds the executive and staff accountable. Although the tool is totally unsophisticated with regard to measurement, it raises basic questions vital to the health and functioning of a board — even a very sophisticated board.

Self-Rating Scale for the Board

Rate Each Item: 5-High
1-Low
Possible Score: 65

☐ 1. The Board is representative of the total community and uses it well.

☐ 2. The Board has some members who are part of the power structure of the community.

☐ 3. The Board is an active, responsible Board.

☐ 4. Participation in the Board's affairs is reasonably well-shared by all the members.

☐ 5. The Board has up-to-date bylaws, keeps good records, and has a functioning committee structure.

☐ 6. The Board is responsible in its fund-raising obligations.

☐ 7. The Board is supportive of the Executive Director, without being a "rubber stamp."

☐ 8. The Board understands and implements the rehabilitation goals of the agency.

☐ 9. The Board does a good job of setting specific objectives and monitoring them.

☐ 10. The Board is sufficiently community-oriented to be able to respond to new needs.

☐ 11. The Board can respond to new ideas which involve risk.

☐ 12. The Board shows basic concern for staff welfare and growth.

☐ 13. The Board selects new members carefully and gives them a good orientation toward their new responsibilities.

☐ TOTAL SCORE

FIGURE 2 — RATING SCALE

The scale on Financial Information for Board Members tries to make board members feel more comfortable about asking questions about financial reports they don't understand. It also underlines some of the real obligations a board accepts in creating and operating a voluntary agency. This scale can be used to launch a discussion which can result in a training session for board members on "What I need to know about our workshop's finances."

Financial Information for Board Members:
A Self-Rating Scale for Board Members

Rate Each Item: 5-High
1-Low
Possible Score: 50

☐ 1. I understand the difference between "cash" and "accrual" accounting.

☐ 2. I try to understand terms like "cash flow," "receivables," "payables," and other terms used in the Balance Sheet.

☐ 3. I ask questions about agency finances when I don't understand the reports.

☐ 4. I try consistently to go through the financial reports before looking at the "bottom line."

☐ 5. I am willing to do some "homework" in order to help guide the fiscal policies of our agency.

☐ 6. I understand why deficits are to be expected in the work-oriented facility.

☐ 7. I accept the obligation of the Board to raise funds for the agency.

☐ 8. I try to avoid petty questions about minor expenditures and deal with major budget amounts.

☐ 9. I accept the recognition that long-range financial planning for our agency will require a significant participation in community affairs.

☐ 10. In my concerns for financial solvency, I don't forget the rehabilitation goals of our agency.

☐ TOTAL SCORE

Chief Executive Officer

The role and function of a Chief Executive Officer (CEO) may vary with the size and the mission of the horticultural program. If the horticultural project is one small aspect of a larger center and encompasses only several trainees, perhaps the chief grower or grounds maintenance manager/instructor will oversee the operation, and little beyond the role of direct supervision will be demanded. If the program is a major endeavor, one envisioning early and rapid growth in sales and contracts with increasing numbers of trainees/workers and a truly substantive training/work co-op program, then the CEO must be expected to allocate correspondingly more time and effort.

In this latter instance, the executive director or appointed senior staff person will have the responsibility of administering the budgetary process, selecting and supervising key personnel and personnel policy, implementing a training program, and introducing business principles throughout the operation. This person must assume chief responsibility for planning, developing, and managing the horticultural project, and often the emphasis of his or her role will be on fiscal management. It would be especially helpful, just as with the board of directors or advisory board, if the individual had prior experience with a horticultural operation and knew such intricacies of horticultural management as seasonal work and sales flow, protracted growing times, pitfalls of equipment failure, avenues in which to seek out contracts, and the skill and knowledge needed in key staff positions. But most important in his or her qualifications is a sound business management capability. The chief executive must conceptualize an organizational system and implement a realistic program of action. He or she must be able to draw upon the board of directors or advisory board and the administrative staff to guide the horticultural project, execute effective training, and implement efficient business systems. Many other responsibilities may be delegated, but it is the CEO's responsibility to enable and to enact a program that realizes the project's mission.

Chapter Five

ASSESSING COMMUNITY NEED FOR A HORTICULTURAL PROGRAM

The importance of community assessment in the planning of a horticultural training or work co-op program cannot be overly stressed. The question is how systematically an assessment can be conducted rather than whether to do it, and the only sound advice is to be as thorough and comprehensive as possible. Assessment may be simultaneous with establishing a board of directors, and board or steering committee members may take an active role in collecting pertinent information. Assessment is part of developing good community relations and will help in shaping a perspective on how the program will fit into the rehabilitation needs of the community and into the horticultural business environment of the area.

Assessment should precede designing the program, rather than follow program determination. There are several principal areas to be assessed:

1. Population
   - Who will be served?
   - How many need the program?
   - From where will these persons come?
2. Selection of program
   - What types of programs are needed?
   - What should be the first phase developed? (greenhouse, grounds maintenance, other aspects)
   - What are the projections for sales and contracts?
   - What is feasible in this community?
3. Employment opportunities
   - What competitive jobs are available?
   - What is the work co-op potential?
4. Avoidance of community business confrontation
   - What is the purchasing potential of the center?
   - Is the center's mission to prepare trained employees?
   - Is the community aware that the center can reduce the tax dollar drain on society?

- Are the center's leaders aware of any direct competition in the community?
- Were potential competitors informed of on-the-job training manpower assistance?

5. Funding sources (See Chapter Six, "Getting the Horticultural Dollar")
   - Are start-up grants and loans available?
   - Will ongoing training fees be charged?

Assessing the Population

The first assessment essential is to find how many individuals really need a training and/or work co-op program and how many of this number will utilize the program. See the sample horticultural community assessment form, Figure 3.

Estimating a percentage of the population from census figures only gives the most approximate number who could use such a program. To be more precise, one should consult the likely sources of referrals. A list of contacts and information to be requested is found on the rehabilitation community needs assessment survey form, Figure 4. These sample forms should be expanded or changed to meet your specific needs and community structure.

The local Department of Vocational Rehabilitation (DVR) office is a first source. DVR offices may have a waiting list or a projection of future needs. This office also may know if other similar programs are planned. Assuming that a mentally retarded group is the primary target, the state or regional office of the Mental Retardation Administration may have not only a census of this population but also a breakdown of persons who are institutional or community residents and an idea of how many may benefit from training. Planners should contact surrounding school system special education personnel to determine the number of handicapped individuals who will graduate or leave the school programs in coming years. School officials also may offer a judgment on these individuals' needs for a vocationally-oriented program. Other generic social service agencies such as Youth Service Bureaus and Mental Health Centers may be able to fill in the gaps and should be contacted for future referrals. A significant group not to overlook are parents' organizations and local advocacy groups such as Associations for Retarded Citizens.

While collecting data about the number of individuals who may use the program, other information also should be sought. What is the need of the population: is it for evaluation, for training, for work co-op employment, for competitive job placement? What services could or would be interlocked with already existing ones? What services might be funded through some of the above-mentioned agencies? Additionally, in the population to be served, are there secondary or multiple handicaps, and if so, how might these conditions affect training in the horticultural setting? What is the estimated number of clients who will be in training on a short-term versus a long-term basis? Many of these questions will not have clear responses, but they all have a bearing on the design of the program and on the sources and the nature of funding to be sought.

FIGURE 3

HORTICULTURAL COMMUNITY NEEDS ASSESSMENT SURVEY

Contact Person & Phone No.	Interest in Rehab Program (e.g., Board, consultation, contracts, employment, etc.)	sales potential	Contracts Possible: — type — size — contact person	Comments
Neighboring Hort. Businesses: Greenhouses:				
Garden Centers:				
Lawn Maintenance Companies:				
Florists:				
Chamber of Commerce:				
Government Buildings:				
Private Industry:				
Chain Store Representative:				

FIGURE 4

REHABILITATION PROGRAM COMMUNITY NEEDS ASSESSMENT SURVEY

Contact Person & Phone No	# Referrals Per Year	Population Referred	Age Range	Programmatic Needs: — Evaluation — Pre-Voc. Trng. — Voc. Trng. — Sh'l'd Emp.	Services Available	Funding Available	Comments
Dept. of Voc. Rehab.:							
Mental Retardation Admin.:							
School System Personnel:							
Dept. of Social Services:							
Community M. H. Ctr.:							
Assn. for Retarded Citizens:							
Youth Service Bureau:							
Other Rehab Programs:							

Assessing Program Options

All too often, enthusiasts establish a horticulture program without regard for the larger horticultural business community and what will be marketable in commodities or services in the area. It is important for a rehabilitation program to be sensitive to other businesses of the profession in the area. It ought to be recognized that these business persons will be potential colleagues, future employers, and competitors, and hence their good will is vital for the program's success in the community.

A market analysis will give a fairly accurate appraisal of some of these problem areas. In the absence of a professional analysis, project planners should attempt a systematic inquiry on their own. They can visit other horticultural centers and ask about the surrounding market; they can talk with florists, chain store representatives, and business persons in the Chamber of Commerce who might be willing to share information or make an estimate of the opportunity for plant sales and grounds maintenace contracts. In the grounds maintenance area, one must consider what size operation might be feasible and must interview prospective purchasers of grounds services: will lawn care contracts be made with homeowners, with private companies, with public or government facilities? are these companies willing to work with a rehabilitation facility? are National Industries for the Severely Handicapped contracts (federal set-aside contracts for the handicapped) possible? See Chapter 23, "Contracting," for more details.

Assessing Employment Opportunities

Not only must business opportunities be analyzed but the availability of job opportunities for the trained handicapped workers also must be established. In some more isolated regions jobs are scarce, and jobs in horticulture and related fields are almost nonexistent. The best job placement opportunities are in an area where there are parks, botanic gardens, an aboretum, or private and public businesses and organizations which have grounds to be maintained. However, it is important to know that many existing training programs have utilized the horticultural environment to develop basic job responsibility and job productivity skills which have resulted in successful employment in other than horticulturally-related jobs.

Assessing and Avoiding Community Business Confrontation

The fairest response to the question of dealing with the competition in the marketplace is that, if the horticultural program offers a quality product or service at competitive prices and demonstrates basic sensitivity to its fellow horticultural business community, the center will gain acceptance and will develop a self-earned income successfully.

One should never use the program's looked-upon advantages (tax support dollars, tax exempt status, United Way contribution, etc.) to create undue financial stress on neighboring businesses. For example, if there is only one greenhouse in town which relies on its seasonal sales of poinsettias, Easter lilies, etc. — sales vital to its existence — then do not pursue marketing of those plants. Turn the situation around; meet with the owners and discuss how you can assist them, perhaps by furnishing a seasonal, contracted-out labor force, growing rooted cuttings for them to finish off, or developing different non-competing products. Purchase materials, whenever economically allowable, from local suppliers. When local businesses find themselves short of a certain crop, be pleased to wholesale it to them. Stress the fact that your ultimate goal is to train good workers for their employment. Show how your removing the handicapped person from tax welfare rolls saves everyone tax dollars. In general, be a sound, competitive, but sensitive element of the horticultural business community.

Assessing Funding Sources

While conducting the initial community survey, one should be aware of any funding sources related to the contracts, such as start-up grants and training fees from DVR. However, for more in-depth source material and information on program funding, refer to the following chapter, "Getting the Horticultural Dollar."

In this chapter on community needs assessment, only the most general measures of the need for and the acceptance of a horticultural training program have been raised. Many other considerations, including start-up costs and personnel, will be considered later in the Manual when discussing the type of training program and the specifics of a greenhouse or grounds maintenance service to be developed.

Chapter Six

GETTING THE HORTICULTURAL DOLLAR

If the horticultural training project will be generating its own income, why is there a need for "getting the horticultural dollar?" Any business, including the rehabilitation training program, must generate its start-up capital and operating expenses. The financial outlay for equipment and professional staff will vary, but initially substantial resources are required. Even so, the self-earned income of the training program never equals the total costs and expenditures of the project. Because training by definition implies less than maximum efficiency of the trainees and because training has its own costs, the income from sales and contracts does not independently support the whole program. The need to raise the necessary capital for the horticultural training center is addressed here.

The essential ingredients in seeking funding rest with answers to the questions, "Where do I look for funding?" and "What do I do to get it?" A booklet entitled "Funding Sources for Horticultural Therapy Programs," prepared by Richard P. Coorsh, Gale D. Snoddy, and Paula D. Relf and published by NCTRH, annotates more resources than are appropriate here and provides further procedural details. This summary will draw from that writing and others to point to resources and to suggest some fundamental proposal and grant writing principles.

Fundraisers

A fundraiser may appear an unlikely method with which to begin, but for projects requesting less than $10,000, it may be a first avenue for consideration. Few foundations and federal grants give much attention to proposals amounting to less than this amount. In the event that this sum represents one's start-up figure, program planners may want to look at the choices open to them, from a well-organized bake sale or a multiple-family yard sale to the professionally-run fundraiser employing a mailing campaign or direct appeal. Frequently, close ties with community groups, such as the Jaycees, Civitans, fraternal organizations, garden clubs, or church groups, provide a program with community identification and a pool of people and good will which generate a good beginning. Garden clubs or members of professional horticultural associations, such as the American Nurserymen's Association, the Professional Grounds Management Association, or the Society of American Florists, may supply a program with plant materials or know-how to get started. As exemplified in Raiford, Florida, such a professional association stimulated a program's development through collaboration on subsequent employment, provided that certain competitive areas were respected. Hence, fundraising should be explored by program planners who may be starting small and who may wish to build up their experience before moving wholeheartedly into an expensive project.

Foundations

One source of substantial funding is the foundation. Foundations may be either public or private, depending upon the source of the foundation's income, and family or corporate according to their philanthropic origins. It is important to understand the philosophy behind foundations generally and to know the specific interests of a foundation from which one is seeking funding.

Generally, foundations concentrate their support in the communities where their employees live and work. Their first, greatest interest is usually in the area of health and welfare with an emphasis upon community-oriented programs and United Way funding in an effort to guard against injecting any divisive influences in the community. Education is their second greatest interest. This commonly means support for colleges and universities, but it also has resulted in grants awarded to vocational education programs.

Finally, they often provide support for innovative programs to improve education for the disadvantaged.[1] However, Coorsh, Snoody, and Relf point out that, "Generally, foundations do not support general operating expenses, building and other construction projects, emergency funding requests, groups without a so-called 'track record,' projects which are not innovative, and existing projects requesting maintenance funds." They rarely provide funding to programs without tax-exempt status.

Some foundations may have a record of a broad variety of funded programs while others restrict themselves to specific issues. It is good policy to inquire about the previous types of programs funded (usually available from the foundation's annual report or IRS forms 990-PF or 990-AR). It also may be advantageous if members of the foundation's board of directors live in or around your community.

How does one identify the foundations that will be good prospects? The following books have information on foundations and should be available at a large public library or university library. All can be purchased through their publishers.

The Foundation Directory, Edition 7, Marianne O. Lewis (Ed.) New York Foundation Center, Columbia University Press. Fully comprehensive reference work including small and large foundations.

The Foundation Center Source Book, Terry-Diane Beck and Alexis Gersumky. New York Foundation Center, Columbia University Press, 1975/76.

---

[1] From the preface to *Taft Corporate Foundation Directory*, Jean Bordsky, Senior Editor.

Profiles 227 large foundations with national and regional grants.

Foundation Grants Index, New York Foundation Center, Columbia University Press.
Available in several forms and numerous subsections
"Grants" — grant records by state and foundation
"Recipients" — list of domestic and foreign recipients
"Subject" — grants listed by approximately 40 subject areas
"Key Words and Phrases" — accesses grants by their descriptions

Taft Corporate Foundation Directory, Taft Corporation, 1000 Vermont Avenue, N.W., Washington, D.C. 20005.
Lists corporate foundations including contact person, locale of grant distribution, types of grants, areas of interests, and special procedures for applying.

The Art of Winning Foundation Grants, Howard Hillman and Karin Abarbanel. New York: Vanguard Press, 1975.

Other sources and details can be found in the NCTRH booklet on funding. When considering which foundations to approach, one more generalization can be added. Program planners would do well to consider their project from several angles in order to broaden the sources for support. For example, the project may be identified with its products — horticultural, agricultural, grounds maintenance services — so as to show how these services or products are associated with the foundation's interests. The program may be viewed from the perspective of being a small business for and of the handicapped. It may be seen as a training program or a vocational education project. With an aggressive effort, these facets can be exploited to show the suitability of one's proposal for a given foundation.

There are certain requirements for foundation proposal writing (which also apply to government grant writing). First, the personal contacts one makes with the funding representatives are particularly important. Even if one does not succeed with a grant request on the first try, good communications with the foundation's representatives are valuable. Second, presentations before foundation committees should be courteous, accurate, and to the point. When a visit has been arranged with the funding body, be prepared with proposal in hand, including amount of money needed and how these funds will be allocated. The presentation of vague ideas and general requests will not meet with generated interest nor success. Third, it is up to the planner to show the value of the program in words the funding body can understand. In simple and human terms describe what results can reasonably be expected. And finally, be sure the choice of target foundations is appropriate for the submission of your proposal. Asking the shoe company for toothpaste is an exercise in futility.

Government Agenices

Programs which are operating in the rehabilitation field already may be involved with various government funding offices and procedures. These procedures are not substantially altered for starting a horticultural program, whether operating as a business or not. Seekers of government grant dollars may begin at any level of government available to them — city, county, state, regional, or federal. Because funding agencies may exist in an interlocking network (regional offices distributing federal money to states and states to counties, etc.), program executives should attempt an overall funding plan before singling out a government body for support, or before requesting money only for a single aspect of the horticultural program. Requirements for matching funds must be examined. Application procedures and the use of grants depend heavily upon the guidelines of the respective agency, the type of program presented, and the population served.

County boards of education, county commissioners or supervisors, and state and regional departments frequently are more receptive to proposals that involve a shared funding responsibility. Matching funds generated by the project itself from other funding sources, in-kind services, contributions received or self-earned monies all manifest a commitment and a desire to succeed which is much more convincing to those spending the taxpayers' money than is a simple request for funds. Developing matching funds presents its own set of challenges to the project director but is worth the effort.

It is not uncommon that upper level bureaucracies require more extensive application procedures and review which take greater deliberation and a longer waiting period for response. Hence, a requisite for seeking government funding is time and patience. Coorsh, Snoddy, and Relf indicate that it may take from 1 to 12 months to process some grant proposals at the federal level.

Preparing the background research, analysis, and contacts for government grant applications often demands more effort than that expended for foundation grants. One must define the project's needs clearly and relate these needs to the funding agency's goals. Detail is particularly important: documentation must be complete, evaluation measures specified, budget requirements neither overestimated nor underestimated.

County, State, and Regional Departments

Funds from local governments are more readily applicable to operational costs, so grant applicants may not need to demonstrate "innovative" or unique programming as at the federal level. Monies may be sought from the general funds or from individual departments such as the board of education. Special grants may even be available to offset deficits, depending upon the proven value of the program. At the state and regional levels more emphasis is placed upon whether the monies requested are for specific goals that the funding agency addresses. As a groundwork is laid for grant submission, representatives from agencies such as Vocational Rehabilitation, Mental Retardation, Developmental Disabilities or other relevant divisions should be consulted for guidelines on how to apply for these monies.

It is wise for program planners to establish a level of rapport with the local government body, such as the county commissioners or city council. For both business and program support reasons, community identification needs to be developed. It is important to show these local representatives how the program is meeting specific needs of their constituents. Some commissioners may respond more readily if a certain citizen sub-group is served by the project; an under-21 age group may fall within the bounds of the school board's jurisdiction. Or, the program may justifiably show how it corresponds to another area of governmental priority. A final and not insignificant source of funds is discretionary or programmatic monies which might be available from local governments. For example, these community officials may be the prime sponsors of federal programs such as CETA (Comprehensive Employment and Training Act) and CDBG (Community Development Block Grant) which can support the horticultural training project in substantial ways.

Federal Sources

The general recommendations for writing proposals for foundation funds apply equally when seeking federal monies. Grants vary widely according to their applicability for operating expenses, salaries, facility construction or expansion. Usually, federal monies are earmarked for innovative demonstration programs developed to define or meet a specific need. As previously stated, it is necessary to identify as many sources of funding in the federal government as seem to have potential, but it is essential to target agencies according to their goals. Federal grant applications are very specific in their requirements for the funding area being addressed, the description and goals of the proposed project, and even the quality of writing and form.

Some funding programs at the federal level require a state clearinghouse procedure to avoid duplication of effort. This is called the "A-95 Clearinghouse Review" and funding directors customarily know if it is required. This review is demanded by law to be processed within 30 days, and the time delay and procedure must be planned. For more information, planners may write for the following documentation:

A-95: What It Is — How It Works and
Circular A-95 and Attachments
Intergovernmental Regulations and Regional Operations Division
Office of Management and Budget
New Executive Office Building
Washington, D.C. 20503

The clearinghouse review requirement most frequently will apply to federal grant applications. It cannot be emphasized too strongly that these federal applications require extensive time for preparation and completion.

Federal sources of funding are by far the most numerous and also the most elusive, mostly because of competition among the large number of applicants. But where does one begin? The National Association of

Rehabilitation Facilities (NARF) has published an 84-page booklet, "Federal Grants and Financial Assistance for Rehabilitation Facilities: The Funding Resource Finder," which contains a reference guide that lists those grants and loans which pertain to rehabilitation agencies. Summaries with contact persons and addresses are included. This booklet is available by writing:

Director
Program Development
National Association of Rehabilitation Facilities
5530 Wisconsin Avenue, Suite 955
Washington, D.C. 20015

The reader is referred to Coorsh, Snoddy, and Relf who identify other resources for the horticultural program. Here are a few of the places to start.

The U.S. Department of Health and Human Services administers the largest portion of funds that may be applicable for the horticultural center. HHS operates through four departments:

1. The Public Health Service
2. The Office of Human Development
3. The Social and Rehabilitation Service
4. The Social Security Administration

Each of these divisions operates its own programs and works through smaller offices. For information about the Department of HHS's policies and procedures on grant applications, the following two publications may be helpful:

"Profiles of Grant Programs" (cost: $1.55)
Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

"Grant Administration Manual" (cost: free)
Office of the Administrator
Social and Rehabilitation Service
Department of Health and Human Services
330 C Street, SW
Washington, D.C. 20201

Of particular note is the U.S. Department of Education which houses the Bureau of Education for the Handicapped and the Bureau of Occupational and Adult Education, among others. For an overview of grant programs administered by the Educational Division, write:

U.S. Department of Education
400 Maryland Avenue, SW
Washington, D.C. 20202

The single most comprehensive document on federal programs and activities providing assistance to state and local governments and profit and nonprofit institutions, both public and private, is the *Catalog of Federal Domestic Assistance* (cost: $16.00). It is available at the U.S. Government Printing Office. The basic edition is published in May each year with updated supplements on completed congressional action available in November. Although quite substantial and overwhelming to the novice, it is indexed with benefits and services in categories including agriculture, business-commerce, education, employment, housing, income security, and transportation.

The Federal Register (cost: $50.00/year, 75¢/single issue, U.S. Government Printing Office, also available in public libraries) provides the most up-to-date information on rules and regulations for various government offices.

The *Annual Register of Grant Support* (cost: $52.50) is available from Marquis Who's Who, Inc. and provides a listing of over 1,500 funding sources that include both government agencies and foundations. Write:

Marquis Who's Who, Inc.
200 East Ohio Street
Chicago, Illinois 60611

Some of the agencies that have funded horticultural programs are listed below. Through the Rehabilitation Act of 1973, the Rehabilitation Services Administration provides project grants and contracts for the expansion and improvement of services for the mentally and physically handicapped. Check with your state Department of Vocational Rehabilitation and write to:

Director, Division of State Program Financial Operations
Rehabilitation Service Administration
Office of Human Development
Office of the Secretary
Department of Health and Human Services
Washington, D.C. 20201

The Developmental Disabilities Office provides project grants to states and nonprofit organizations for support of projects of national significance, demonstration of new services, and training and technical assistance. Write to:

Director, Administration on Developmental Disabilities
Office of Human Development
Department of Health and Human Services
330 C Street, SW
Washington, D.C. 20201

Title XX of the Social Security Act, Amendments of 1974, provides grant monies for low-income individuals, usually through their state agencies. Qualifications for handicapped persons and others are based on income levels. Write to:

Director, Division of Program Development
Public Service Administration
Social and Rehabilitation Service

330 C Street, SW
Washington, D.C. 20201

These individuals also may be eligible for Supplemental Security Income through the Social Security Administration. Information about SSI may be obtained from:

Bureau of Supplemental Security Income
108 West High-Rise
Social Security Administration
Baltimore, Maryland 21235

The Small Business Administration's Handicapped Loan Assistance Program may be an important source of low interest loans for construction or operating capital. Information about SBA programs may be sought from:

Office of the Administrator
Small Business Administration
1441 L Street, NW
Washington, D.C. 20210

CETA

The Department of Labor operates the CETA program which has been utilized by training and co-op programs. CETA has proven to be an excellent source of funds to support certain nonprofessional staff positions and to cover first year program and wage costs of work co-ops.

As with many federally funded programs, CETA is required to have a local Citizens Advisory Group which helps establish funding priorities, approves applications, etc. Be aware of this group. Better yet — become a member.

CETA programs which are important to rehabilitation facilities are authorized by Titles I, II, III, IV, VI, and VII.

Title I sets forth the general and administrative provisions for all programs.

Title II is the major source of funds available to states and local governments for services for the economically disadvantaged and transitional opportunities.

Title III authorizes grants and contracts with public and private organizations to help targeted populations which face severe employment problems. These funds also are used to finance special research and evaluation programs, including research into the special employment problems of the handicapped.

Title IV provides for in-school youth programs and vocational training for high school dropouts. Programs for in-school youth often benefit handicapped youth from special education classes.

Title VI provides for public service employment (PSE) for the structurally unemployed. PSE programs can be tapped to pay for the hiring of staff members such as instructor's aides and other nonprofessional positions.

Title VII provides funds to increase private sector jobs and to support Private Industry Councils. Facilities may be members of Private Industry

Councils and can advise both private business and industry and government at city, county, and state levels.

One should check first with local government sponsors of CETA programs. Further information pertaining to CETA grants is available from:

Employment and Training Administration
U.S. Department of Labor
601 D Street, NW
Washington, D.C. 20213

The Department of Labor also publishes a free monthly newsletter, "Interchange," which provides information about CETA and other programs. Write:

Office of the Secretary of Labor
3rd Street and Constitution Avenue, NW
Washington, D.C. 20210

Community Development Block Grants

The Community Development Block Grant (CDBG) program was authorized to provide grants to local governments to improve community services. Both public and private nonprofit centers for the handicapped are eligible to receive funds to rehabilitate facilities, to acquire and build facilities under certain circumstances, and to provide public services and to remove architectural barriers. A number of rehabilitation programs, such as the Clinch Valley Workshop in Tazewell County, Virginia, have been successful in receiving capital improvement dollars from CDBG programs. Any organization pursuing construction or expansion of facilities should research this resource. Begin by becoming acquainted with the local government authority responsible for the CDBG program in your area or write your office of the U.S. Department of Housing and Urban Development (see Appendix). It is important that any applicant be aware of the local Community Development Advisory Committee and obtain their support for the proposed project. More complete information on the CDBG program can be found in the booklet, *Citizen Participation in the Community Development Block Grant Program,* (HUD-CPD-389(2)). To obtain a copy, write to:

U.S. Department of Housing and Urban Development
Office of Community Planning and Development
Washington, D.C. 20410

Surplus Property

One of the first needs of any facility will be adequate acreage on which to build a greenhouse or to provide storage for potentially extensive grounds maintenance equipment. Surplus property may be available at the county, state, or federal levels under purchase or lease terms. In most cases an organization's tax-exempt, nonprofit status qualifies it for eligibility to acquire such property. At the county level, one seeks out the commissioners or the head of the Department of Public Works. At the state level the directors in charge of Public Services, Natural Resources, the Agricultural Department, or Municipal Services may be of assistance.

Both surplus land and equipment (office or field equipment) are available from the federal government. Negotiations for land may be sought out individually or in cooperation with a county or state agency. For information about federal surplus property, write:

Assistant Commissioner
Office of Real Property
Public Buildings Service
General Services Administration
Washington, D.C. 20405

For information on federal surplus personal property (equipment), write:

Director, Utilization and Donation Division
Federal Supply Service
General Services Administration
Washington, D.C. 20406

It is now a cliché to say that grant writing is an art. More than that, it is work that requires perseverance and practice paired with getting to know the ropes. Coorsh, Snoddy, and Relf raise the possibility that without prior experience a program director might consider hiring a grant writing consultant. This option may depend upon the monies available to the program and the extent of need for this service. On the other hand, one may wish to write the first grant requesting the professional consultant.

The grant applicant should be aware that contacts made in the process of researching, writing, and submitting an application may be exploited in future pursuit of funds. If the original application is not funded, apply again during the next funding cycle. Sometimes an organization wins a grant after applying unsuccessfully several years in a row. Once a grant is won, this same funding source, especially in the case of a foundation, is usually a good source of funds for subsequent needs, such as expanding a program for which it supplied start-up funds.

Chapter Seven

PERSONNEL ISSUES

In keeping with standard good personnel practices, the horticultural training center must develop and disseminate clearly defined personnel policies for its employees in accord with its training and/or business program. These policies will cover matters of hours, wages, and evaluations, and benefits such as sick leave, vacation, and a health package. Co-op workers must receive similar treatment, both through written policies as well as through benefits which are as nearly equivalent as possible to those for full-time staff. Each center will want to give careful attention to the rights of trainees and co-op workers, regardless of their handicapping condition, as defined and regulated by federal and state Departments of Labor. A personnel handbook that summarizes the policies and practices of the center should be provided to and reviewed with each new enrollee and employee.

Unique Personnel Issues

There are several personnel practices which might be unique to a horticultural greenhouse and/or grounds maintenance operation but which would not apply to a prime manufacturing or subcontract-related business. Of the issues listed here, several will be pertinent to staff, co-op workers, and trainees alike. Decisions on whether or how to implement these practices are determined by each organization, depending upon the size and nature of the center's business and the number of persons employed and trained.

1. Seven-day coverage of the greenhouse is necessary to ensure adequate watering and ventilation and in case of an emergency. Some person or persons must be available or employed specifically for weekend and holiday coverage.

2. Greenhouse work periodically entails times of high volume business. April, May, and December, in many areas of the country, each brings in nearly triple the amount of sales as any other month during the year and requires longer hours and more intense work during and preceding these periods.

3. Retail sales work during peak periods frequently means longer hours for sales personnel and includes weekend hours. Additionally, if building sales are held at locations distant from the greenhouse, extra travel time must be taken into account.

4. Grounds maintenance services are largely seasonal with the length of the contract season depending upon the nature of each contract and the climate of the area. In the height of the season, Saturday work may be required; in the winter months, alternative work must be found. Indoor janitorial work is one possible solution. Another is requiring staff and workers to take annual leave during the winter period.

5. Vacation time for staff and workers usually must be restricted from periods of peak activity. While this is ordinarily not a problem, some policy planning ought to be done in this regard.

6. A policy of informing the staff and workers about sales/services and income/expenses (or profits and losses) helps to develop an awareness of the business model being implemented. While this may not customarily be thought of as a personnel policy, it is considered so here in light of its motivational and organizational importance to staff, trainees, and workers.

7. Combining training and business models may create conflicts over differential demands upon professional horticultural staff and office or service-related staff. There is a particular need to define responsibilities since some duties may overlap and others may be overemphasized. In addition, conflicts may arise over demands upon horticultural staff for longer work hours than for strictly training staff and over differences in pay levels despite apparently similar hierarchical levels. Any such conflicts must be dealt with openly and clearly.

In-Service Training

There are two aspects of the horticultural training program that warrant continual updating and for which in-service programs are valuable. These are, first, training procedures and second, greenhouse or grounds management business and production policies.

In-service periods devoted to establishing training methods and consistency are considered essential in a training program. Since there are few tried and true means already outlined for horticultural training programs, staff members frequently will come with a variety of skills and approaches, all of which may be valuable. However, for trainees to benefit from a program, some degree of continuity should exist among instructors and across different situations so that methodologies, such as task analysis (see Chapter 13), are reinforced consistently. At the same time, modifications to any program should be made in order to improve training. The regular provision of in-service periods can underline the role of training and confirm that it is the major component of the horticultural training center.

Business policies are to be monitored continually for efficiency. Periodic meetings on developing greater productivity or quality serve to spread uniform procedures throughout the staff. In the case of untrained staff, production methods will have to be taught, and sufficient time should be allocated for this purpose. It is also advantageous to provide time and money for professional staff to attend conferences and seminars in order for them to maintain current awareness of developments in their field. See Appendix for in-service training opportunities.

Key Personnel

There are at least seven individuals who hold essential positions in horticultural operations.

1. Training Supervisor
2. Greenhouse Production Manager
3. Plant Marketing/Sales Specialist
4. Grounds Contract Marketing Specialist
5. Greenhouse/Grounds Crew Instructor
6. Greenhouse/Grounds Crew Foreman
7. Greenhouse and Equipment Maintenance Person

A program which expects to develop on a business model and to increase its self-earned income should plan to hire persons at competitive salary levels for these positions. Salaries will vary with the education and experience of the candidates and with the geographic area. Local trade associations may be the best sources for determining salary scales. While there must be some flexibility for the project that is starting small (one person may have to carry the responsibility for all seven positions), a growing operation will soon realize the significance of these individuals for the skills and knowledge they bring to production and sales.

Following are brief descriptions of these essential positions. Complete job descriptions are given in the Appendix.

Training Supervisor - This person is vital for overseeing the training program. Experience with horticulture is not so important as is knowledge of task analysis, behavioral learning methods, and the writing and implementation of IPPs. The development of a trainee "curriculum" and the purposeful utilization of trainees' individual prescriptive plans depend on the constant attention of the Training Supervisor.

Greenhouse Production Manager - This person is responsible for the planning, growing, and shipping of the crop, including propagation, watering, fertilization, application of chemicals, and quality control. A technical knowledge of the cultural requirements of a variety of plants is required. The selection of crops is made in conjunction with a business manager or salesperson, as sales ultimately determine what crops will be grown. Many states require licensing of one or more individuals for the use of certain pesticides and other chemicals, and usually the production manager will hold or will be eligible for such a license. The production manager has principal responsibility for supervision of other employees and/or trainees in the greenhouse. In larger houses, a grower may handle the specific day-to-day duties of schedules, quality control, disease problems, and inventory.

Plant Marketing/Sales Specialist - A greenhouse of significant growing potential eventually must employ an individual with primary responsibility for knowing what to sell and how to accomplish selling it in the community. This person must have fundamental sales knowledge and must know what avenues of marketing might be pursued most successfully, such as a retail shop, building sales, roadside retail outlets, a wholesale market, a combination of the above, or other alternatives. The ability to keep accurate records and to make projections of future sales is likewise necessary. This person must be sensitive to other competitors in the area and develop a working association with them. The sales specialist usually will represent the horticultural center in flower shows and trade meetings.

Grounds Contract Marketing Specialist - In grounds management, a contract specialist seeks out and procures contracts with industry or government in the surrounding area. He or she must be able to develop contracts that can be implemented efficiently by the training and/or work co-op crews and must be familiar with the equipment required for given contracts. The contract specialist ensures the completion of the job and plans development of new sites 6 to 12 months prior to the contract season. This person must become aware of the kind of work best suited to the crews' levels of competency, for there is a great difference in mowing a flat, treeless lawn and tackling a cemetary with rolling hills, scores of trees, and hundreds of above-ground monuments.

Greenhouse/Grounds Maintenance Crew Instructor - This position is critical to the ultimate success of the training program. The new breed of college graduates having formal training and a combination of social, educational, and horticultural knowledge and skills is strongly recommended. (See Appendix for sources of staff recruitment.)

Greenhouse/Grounds Maintenance Crew Foreman - The position of crew foreman in the work co-op setting requires greater emphasis on technical greenhouse or grounds maintenance skills and experience. Of particular value is supervisory and leadership ability. Two-year A.A. degreed graduates from applied horticultural schools make excellent crew foreman.

Greenhouse and Equipment Maintenance Person - One of the most underrated staff members has always been the person in charge of maintenance. This individual should have a basic knowledge of carpentry, electronics, and mechanics. The bigger the operation, the more critical this maintenance position becomes. In a grounds maintenance operation, a person with comparable skills is required, although the emphasis here is on maintenance of equipment and vehicles of the grounds maintenance program. An additional requirement of a maintenance person is availability to respond to emergencies on call and to put in large amounts of overtime at peak periods of activity.

Numerous other quality staff are highly important for the efficient and productive operation of the center's program. These include counselors, accountants, and support service personnel. Their number depends upon the size and dimension of the program. Also, the larger the greenhouse or grounds maintenance operation, the more specialization there will be in responsibilities such as shipping, product development, contract field supervision, landscaping services, and interior plant design and maintenance.

Recruiting Sources

A list of several sources for recruiting persons trained in horticulture in both four-year and two-year academic degree programs is located in the Appendix. Job openings can be advertised in trade magazines and a job bank source which are listed. It is worth emphasizing that, in regard to greenhouse leadership, experience must be highly regarded, since contending with idiosyncracies of water composition, climate, lighting, choice of crops, etc., requires more than academic training.

NOTES

Chapter 8

ADMISSION, EVALUATION AND TRAINING PLACEMENT

Having already determined the population to be served and their numbers and needs, the program developer must set up policies and procedures for receiving admission requests and referrals, for evaluation, and for placement in the area of training most agreeable with the individual's needs and desires.

First, minimum standards and criteria to be met must be set for those accepted into the program. Depending upon the mission of the program, decisions must be made on such matters as minimum self-care skills and mobility required of the prospective trainees, whether severe emotional or behavioral discipline problems can be served by the horticultural program, the advisability of serving persons with multiple handicaps, how severe or mild the handicapping condition can be, age requirements, etc.

Referral Sources

Referral sources then can be told of the new program and provided with requirements or standards to be met by prospective trainees.

A good working relationship should be initiated and maintained with each referral source whose representatives surely will want to visit the program site, see the facilities, and meet one or more staff members with whom they will be working.

Local referral sources may include:

physicians
vocational rehabilitation office
a chapter of the association for the handicap to be served
office of the government agency for the handicapped
citizen advocacy groups
department of social services
other centers or programs for the handicapped
CETA offices
public school special education office
employment office
counselors specializing in training for handicapped persons
state or regional institutions

Screening

Screening procedures enable the program to determine the suitability of the person referred. An initial telephone screening will establish the prognosis for eligibility. The staff member responsible for intake and evaluation will want to meet personally with the prospective trainee, referral counselor, and, if appropriate, his or her parents or guardians to ascertain that entrance criteria can be met and that the person desires to participate in the training program. Prior to the initial interview, as much information as possible should be gathered to speed the screening process and to aid in making appropriate referrals; application forms should be filled out and releases and information requested from any past service providers.

Evaluation

Evaluations should be made following the screening process. Medical and psychological evaluations should be performed. If the program is not equipped and staffed to perform these internally, they must be accomplished privately and the results presented as part of the evaluation procedure. Many times these evaluation results can be obtained from the referral source, such as an office for vocational rehabilitation, the public school system, etc. The screening process also may reveal specific questions, pertinent to the individual, which should be answered.

But the horticultural program also will want to include a work evaluation procedure as part of the intake process. The applicant can be given one or more of a number of tests which measure various physical, attitudinal, vocational, and academic abilities plus work responsibility, productivity, and skill level. An on-the-job evaluation is perhaps more valuable as the applicant spends several days or weeks, as appropriate, participating in the program settings. Such a sample period provides staff with a good observation of the applicant while the prospective trainee gains knowledge of the training program and its opportunities.

Evaluation results should be made known and discussed openly with those persons concerned — the applicant, parents or guardians, counselor, etc. If the decision is made to accept the applicant into the training program, program personnel will explore in this meeting long-range expectations for the trainee in light of his or her potential balanced with the training program's capability of fulfilling that potential. As a result of this conference, short-term and long-term goals are formulated by the interdisciplinary team and an individual training plan developed for reaching those goals.

Training Placement

Selection of the training setting should be made, to the extent possible, in conjunction with the expressed wishes of the trainee. Placement can be made at any point along a continuum of development, from prevocational to vocational to work co-op, as is indicated by the evaluation. Initial placement should enable the trainee to begin at his or her level and allow for systematic upgrading in skill and work habit development.

Chapter Nine

TRAINEE AND WORK CO-OP WAGE DETERMINATION

Wages paid to trainees and co-op workers are regulated, in most instances, by federal and state legislation. The wages of trainees and co-op workers will be an important aspect of the business operation; hence, salary policies must be clearly established.

Three wage guidelines which should be followed are consistency, fairness, and documentation. A consistent policy must exist for trainees working throughout the operation, regardless of whether they are on greenhouse, grounds maintenance, or other crews. Workers ought to be informed of their job positions and responsibilities and told how wages will be paid based on those duties. Trainees and co-op workers must have assurances that they are being treated fairly. The worker may not know how pay scales are worked out mathematically, but he or she should be given an understanding of prevailing minimum wages and of the percentages of minimum wages based on job performance. Finally, the center must maintain documentation supporting the wage rates of each trainee, the job responsibilities for which they are paid, and the basis on which the pay rate is calculated. Some efficient and accurate means must be established for recording trainees' overtime hours. The Federal Labor Standards Act spells out other items for which documentation must be kept.

Department of Labor Regulations and Special Certificates

The horticultural center must adhere to federal regulations established by the U.S. Department of Labor (DOL) in the Federal Labor Standards Act (FLSA), including those which prohibit discrimination based on sex, age, handicap, race, or creed. Of particular importance here are the specifications of the law which pertain to paying wages of less than the minimum rate and which will apply to most trainees and many co-op workers.

Since many handicapped workers are not work productive at the same rate as an average nonhandicapped worker, and therefore to pay equal wages for unequal work output would not be cost efficient, the U.S. Department of Labor has established regulations under which a nonprofit work program which assists in the rehabilitation or employment of handicapped persons may pay subminimum wages.

The law states that the training program or work co-op must apply to the Wage and Hour Division of the DOL for a certificate waiving the minimum wage requirement. Although, under the FLSA Amendments of 1977, the minimum wage is $3.10 an hour effective January 1, 1980, and $3.35 an hour effective January 1, 1981, the applicable minimum wage in a specific vicinity and a particular industry may be higher. Questions concerning the proper minimum wages applicable in a specific situation should be directed to the Wage and Hour Division's Regional Office in your area.

Five types of certificates authorizing subminimum wages are available for clients employed in training and work programs.

1. Regular program - a work program other than a work activities center program or evaluation or training program. The minimum wage set in the certificate may not be less than 50 percent of the applicable minimum wage.

2. Work activities center - Clients must, among other requirements, meet the test of "inconsequential productivity" which specifies that the clients' physical or mental impairment must be "so severe as to make their productive capacity inconsequential."

3. Evaluation and 4. Training
   Evaluation and training programs must meet certain requirements pertaining to training, instruction and supervision, recordkeeping, and progression. If evaluees or trainees are paid less than 50 percent of the applicable minimum wage, the program must receive prior authorization from the state vocational agency. However, if any production is done, it is suggested that a Work Activities Center certificate be obtained.

5. Individual rate - If the minimum wage for a particular individual is less than the regular program minimum wage, and the program does not have a Work Activities Center certificate, an individual rate certificate must be obtained and receive state vocational rehabilitation agency authorization. However, in no case may an individual rate be less than 25 percent of the applicable minimum wage.

Generally, certificates are issued for one year and are renewable upon application. For newly-established programs, short-term certificates may be issued to allow time for accumulation of required data. The certification procedure is administered by the regional office of the Wage and Hour Division of the DOL and certificate applications should be sent to that office. Some states may require approval of the lower pay scales by the state office which controls wage rates.

Wage Rates and Time Studies

Below minimum wages must be commensurate with wages paid nonhandicapped workers in the vicinity for essentially the same type, quality, and quantity of work. Wages may be paid at piece rates or at hourly rates, but because of the nature of horticultural work, it is usually more desirable to pay on an hourly basis. To establish the proper wage rate to be paid each trainee and worker, time studies must be conducted on a regular and continuing basis or at least every six months. A time study provides an estimate of productivity expected from the nondisabled worker and is used in the comparison of the productivity of the disabled individual. Sample time studies of basic greenhouse skills may be seen in the Appendix. Each center is advised to work out its own standards since individual differences in materials, conditions, or procedures may occur. Studies should specify the conditions, the process, and the accuracy measure under which the time study is performed. For example, a time study for lawn maintenance should show rates at various sites because each of these sites is characterized by different topographical conditions: greater or lesser numbers of trees, slopes or flat areas, obstacles around which to mow, etc.

In general, a time study includes the following steps.

1. At least three nonhandicapped persons who are familiar with the task are selected to perform the task. Usually these are greenhouse or grounds instructors, as appropriate. Persons with unusually high or low dexterity should not be used in a time study. Document carefully the method used and record each step of the process, including names and addresses of those taking the test.
2. The nonhandicapped individuals complete the task under the conditions specified for the handicapped individual. For example, the pots of specified size are laid out, soil is premixed and available at a bench, stock and flats are placed at the bench. For a grounds maintenance task involving mowing, a lawnmower with a full gas supply is ready and on site. The nonhandicapped workers then complete the task in the same way specified for the trainee or worker.
3. The average time and accuracy of the instructors are used to calculate, to 90 percent accuracy, the rate for the task.
4. The handicapped trainee or worker completes the task, in the specified manner, without further prompting or training by the instructor and under timed conditions. If possible, two or more timed trials should be performed at different times of the day (morning, mid-day, close of day) to obtain an average.
5. A production rate is calculated which takes into consideration accuracy, quality, and quantity of work produced. This production rate then is multiplied by the base pay in the job description. In many instances, horticultural labor is set at minimum rates; however, some jobs do specify a wage higher than the minimum and this is the case rate used. In contracts negotiated through NISH, the industry's prevailing local rates are built into the contract (see section on NISH in Chapter 23 "Contracting for Grounds Maintenance").

Management personnel of the horticultural center should work very closely with the regional DOL office in establishing and reviewing all wage determining procedures.

Recordkeeping

The horticultural center is required to maintain and have available for inspection records which thoroughly document each worker's handicap, productivity, and time studies, plus documents relating to all certification which has been obtained and industry production performance and wage standards. Recordkeeping regulations are available from the DOL Wage and Hour Division.

Chapter Ten

MANAGEMENT INFORMATION SYSTEMS

Basic management systems consist of immediate and long-range planning, daily operational systems, and program evaluation reports. Each must be planned, administered, and evaluated with sensitivity and common sense. Forbes Magazine, proclaiming a corporate success story, stated, "Maybe that's all good management is: a judicious mixture of common sense and rigorous planning."

The rehabilitation and work co-op programs for handicapped persons historically have been weak in basic, integrated management systems. Without a baseline understanding and implementation of sound management principles, the training quality (trainee development) and business efficiency (self-earned dollars) of horticultural programs will be greatly reduced.

Following are brief introductions of management topics which the horticultural program administrator will use as a springboard to further study. These topics include mission clarification, planning, operational systems and policies, evaluation, and common sense sensitivity.

Mission Clarification

The whole integrated management system starts with the purpose of the organization. Without a clear mission statement, the best planning and operation and evaluation systems will be less than successful, for these systems are simply tools to be used in accomplishing one's mission.

A major weakness of most mission statements is that they are too global in definition and never really state in qualifying terms just what the program intends to accomplish.

Planning

Perhaps the greatest weakness — and conversely the greatest need of many administrative personnel — is planning. The importance of good planning cannot be overemphasized, for through planning, the mission's goals and objectives are defined. Systems are built to evaluate the strengths and weaknesses and periodic progress of the plan, all of which will bring about plan redesign as necessary.

Planning takes time and people: time, which in the long run will prove to be not only highly productive but also absolutely necessary, and the involvement of all personnel associated with the program, including trainees and co-op workers. Without staff, board, and community involvement, any plan will be termed "*your* plan so *you* implement it."

Ample material on administrative planning methods is readily available from libraries and bookstores.

Operational Systems and Policies

The purpose of systems and policies is to provide the tools by which plans are implemented. Responsibilities, authority levels, and accountability checks are clearly defined; problem solving techniques are implemented; good communication channels are opened and used.

As in the planning process, it is good management to have program personnel involved in the formation of basic management systems and policies. This involvement is termed "Participatory Management" which, with other effective management systems such as Management by Objectives and Management by Exception, is necessary for a successful, smooth-running organization.

Management operation systems can be exemplified by the financial systems under which daily, weekly, and monthly reporting and tracking information is gathered. This information is used to control and direct the financial outcomes of each program area. Evaluation and control tool components consist of budgets, cash flow schedules, monthly financial statements, and annual audits. Also, daily, weekly, and monthly reports of actual sales and service income are essential, especially if self-earned income is significant.

Equally important is a system of information which objectively states the accomplishments — or perhaps the lack of accomplishments — of the program as a whole. By using one of the program evaluation systems, one can track the effectiveness of the program to whatever level is needed.

Evaluation

Of utmost importance is the establishment of evaluation systems. An overall development plan is only as good as its built-in evaluation controls which inform personnel of the need to expand, reduce, eliminate, or completely redesign components of the plan.

There are many evaluation systems available for use. One highly recommended evaluation system is *Program Evaluation: A First Step* put out by the Commission on Accreditation of Rehabilitation Facilities (CARF), 4001 West Devon Avenue, Chicago, Illinois 60646. Basically, this system assists a facility in the "first step" toward standards of accountability to be met by any organization in measuring outcomes or results in such a way that program performance can be improved and community support can be enhanced.

Staff members who are directly involved in the program on a daily basis should be aware of what is expected of them and how their performances are measured. Actually, since they originally participated in establishing goals and the methods to reach those goals, they are tracking their own performances. This self-evaluation has a positive effect on staff personnel versus the usual negative feelings associated with accountability.

Common Sense Sensitivity

The final principle of good management is being sensitive to others and aware of the value of good old common sense. A good measure of administrative common sense, supported by ongoing planning, participatory policies and systems, and objective evaluations, will result in highly successful training and work co-op programming.

NOTES

64

Chapter Eleven

GOALS IN A GREENHOUSE PROGRAM

In designing a program for training or co-op work using the greenhouse environment, one first determines the goals of the program for the persons it will serve. In some plans the greenhouse operation may have a singular purpose within a larger diverse program; in other plans, it may encompass multiple levels of programming using the same greenhouse facility and serving persons of varying abilities. These different circumstances warrant goals having their own priorities and organization. Without conscious attention to clarifying what one wants to accomplish within the greenhouse setting, it is possible that any of a number of influences can take control of the program. Clearly stating the goals of the greenhouse program puts these elements under the control of the planner and director.

Three components that enter into setting the goals of a greenhouse program are:

1. Purposes: What do you want to accomplish?
2. Persons and disabilities: What disability is being served and how many individuals are involved?
3. Self-earned income: What role is it expected to play within the program's goals?

Planners must assess how much control they have over each of these areas in order to determine how much control they may have over maintaining the original goals of the program.

Purposes: What Do You Want to Accomplish?

The greenhouse program as described herein is divided into three models, each with its own purpose.

Prevocational training builds up personal, social, and work adjustment foundation level behaviors that are considered prerequisites for vocational training. The focus is on how the trainee develops self-esteem, good personal attitudes, and communication; how the trainee interacts with co-workers; and how the trainee fits into the work environment, is motivated, punctual, responsive to supervision, etc. Productivity is emphasized.

The outcome of prevocational training is a person who has developed proper personal and social behaviors and a basic understanding of and adjust-

Successfully creating new plants from cuttings affirms one's capabilities and self-worth.

---

ment to the work environment, thereby qualifying for entrance into a vocational training program. These prevocational individuals generally are responsible for themselves, function effectively in a group work setting with co-workers, and have demonstrated basic understanding of and participation in the work environment.

Vocational training provides training in specific horticultural skills to prepare individuals for greenhouse or other plant care-related jobs, sharpens the personal and work adjustment behaviors, and develops a baseline of work skills and attitudes which can result in a variety of employment opportunities.

The outcome of vocational training is a person who has acquired specific skills in greenhouse work and the generalized work habits of a good employee, and who is prepared to accept co-op work or full employment in a greenhouse or in another appropriate job placement.

Co-op employment almost exclusively emphasizes full employment of handicapped workers in the greenhouse operation at wages above 50 percent of minimum based on productivity. Little or no time is spent in training as such, since the primary responsibility of the worker is to produce marketable plants suitable for consumers. The corresponding responsibility of the co-op is to generate sales and thereby create work for the employee.

The result of co-op employment is employment for persons at a level of 50 percent or better of the minimum established wage, and a sales income equal to a minimum of 75 percent total co-op expenses. Table 5 gives a comparison of program goals, training versus production, expected amount and role of self-earned income, the number of individuals who can be served, and their wage range. The purpose in each of the program goals involves increasing the degree of vocational readiness, up to and including employment, and each program utilizes the greenhouse environment differently to fulfill its purposes. However, the different emphases result in distinct designs in how the greenhouse work is structured, the number of persons employed and their wage levels, and the expectations of self-earned income.

Persons: Numbers and Disabilities to be Served

The population to be served in a given program is determined by the group's mobility and work readiness.

Mobility in greenhouse work is the general ability to transfer pots and baskets around the greenhouse, the general ability to lift materials weighing up to 50 pounds, and the dexterity to work with one's hands. With a total population who experiences serious immobility, productivity can be seriously hampered. If persons of mixed levels of mobility are present, some tasks can be allocated differentially or team systems can be set up, but this adaptation alters the potential design of the program.

Work readiness refers to the willingness of the person to spend 4 to 8 hours in a greenhouse, to get his or her hands dirty in soil, to respond to instruction, and generally to attend to tasks and equipment with some consistency. Programming will differ for a group of severely retarded or emotionally disturbed individuals compared with others who have physical handicaps. The greenhouse setting can be used in both instances, of course. The issue is not so much IQ and complete physical ability as the preparedness for and adaptability to the work setting. With a slow adaptability among a majority of the individuals, high self-earning expectations are unrealistic. An ideal program would be composed of several levels of programming and would provide movement through and within its components.

The number of individuals who can be served in a greenhouse operation must be examined carefully.

A prevocational program might serve as many as 10 individuals with one instructor; the square footage used may be as limited as 1,500 square feet or up to 10,000 square feet when this level of training is integrated with a productivity design. With some populations, it may be advantageous to keep this group in a relatively confined area under the instructor's close supervision.

The vocational training program might serve 10 individuals with one instructor. These individuals are responsible for larger numbers of plants and a wider range of tasks. It is desirable, therefore, for them to cover up to as much as 10,000 square feet, provided the grower has additional help. Production and wages are naturally higher in the vocational program.

In co-op employment, five individuals should serve at least 7,500 square feet and possibly up to 10,000 square feet of greenhouse. Labor is one of the mostly costly elements in greenhouse work; hence, making the most efficient use of one's work force is mandatory.

Self-Earned Income: Its Expected Role in Program Design

Self-earned income does not stand independently when one is setting program goals. It must be weighed in light of the population to be served, how capable the individuals are, and exactly what purpose one wants to achieve from the program.

Prevocational and vocational training program sales income must offset costs of the program rather than fully cover them. Prevocational program income should not be expected to generate more than 10 to 15 percent of total costs; a vocational training program that is operated efficiently will produce 20 to 30 percent of costs.

Work co-op sales and services ideally should provide income to cover all expenses, including wages, administration, and overhead. Minimally, one expects the co-op income to pay for employee wages and the bulk of direct costs. In a 10,000 square foot growing area which employs a grower and up to five co-op workers, the greenhouse should gross $65,000 to $120,000 per year in sales, depending on whether wholesale or retail. Sales should amount to at least 75 percent of total required income.

Safety

A safe training and work environment is of highest importance. Before beginning a greenhouse training or co-op program, instructors and supervisors should draw up applicable safety guidelines, particularly as they apply to the physical greenhouse surroundings and the use of chemicals which should be kept in locked cabinets. A total safety attitude should be developed among all staff, trainees, and workers and reinforced with periodic staff in-service training.

FIGURE 5 — COMPARISON OF GREENHOUSE PROGRAM GOALS

	RATIO TRAINING TO PRODUCTION	PROGRAM GOALS	EXPECTATIONS OF SELF-EARNED INCOME	# INDIVIDUALS SERVED	WAGES
PREVOCATIONAL	75%/25%	Personal Adjustment Work Adjustment	Minor	10/instructor/ 1,500-10,000 sq. ft.	25% of minimum or less
VOCATIONAL	60%/40%	Personal-Work Adjustment Refinement Skill Development Production Efficiency	Moderate	10/instructor/ 10,000 sq. ft.	25%-50% of minimum
CO-OP EMPLOYMENT	10%/90%	Skill Refinement Production Efficiency Competitive Employment	Maximum (should approximate industry standard)	8-10/grower + aide/ 18,000 sq. ft.	50% of minimum up to standard wages

Chapter Twelve

PREVOCATIONAL GREENHOUSE TRAINING PROGRAM DESIGN

Goal

To prepare a unit of 10 individuals to a work readiness level.

Objectives

1. To establish a training program in work readiness focusing on personal and work adjustment behaviors by utilizing the greenhouse work environment.
2. To provide this unit with one instructor, greenhouse space of at least 1,500 square feet, and plant materials and basic greenhouse supplies.
3. To reach an annual greenhouse sales target of $5,000 to $20,000 income from direct sales, or to provide supplemental labor to a vocational training or work co-op production program which generates $5,000 to $20,000 in additional income because of the prevocational labor.

These objectives are stated in terms of the habilitation or rehabilitation of individuals. Productivity demand is minimal. However, real work serves as a major function through which the objectives are accomplished. Programming revolves around developing appropriate behavior, and the use of greenhouse tasks is subordinated to this end. At the prevocational level, trainees spend about 75 percent of their time in greenhouse activity and the remaining 25 percent in other environments pursuing similar goals. The personal and social adjustment needs of these individuals are such that other programming (such as Activities of Daily Living) is warranted. While either the same or different instructors may carry out this training in other settings, the program goal and the curriculum provide the thread of continuity in each of the environments used.

Curriculum Criteria

The prevocational curriculum consists primarily of criteria in vocationally related personal and social adjustment behaviors or skills — areas of functioning in which a person demonstrates the ability and readiness to interact appropriately in a work force. The greenhouse provides a realistic and stimulating environment for implementation of these criteria.

The program's curriculum criteria are an attempt to state as behaviorally and completely as possible the kinds of behavior that are deemed necessary for a person to function normally in a work environment in our society. The list of criteria provides a structure through which the instructor can set directions and goals for individual trainees. Each item is defined operationally for ready understanding by the trainee and for instructor consistency.

Prevocational curricula serve to meet the personal-social-vocational adjustment needs of individuals. Programs develop a curriculum from a comprehensive description of the needs of their respective populations.

Methods

Melwood Horticultural Training Center utilizes five basic "tools" composed of tests, rating scales, checklists, and record summaries as methods to implement curriculum criteria. These five tools address the strengths and weaknesses of individual trainees and are:

1. The Melwood Prevocational Evaluation Form (work adjustment)
2. The Adaptive Behavior Scale of the American Association of Mental Deficiency (Activities of Daily Living)
3. The Melwood Social-Recreational Checklist (social and recreational areas)
4. The Melwood Residential Rating Form (residential)
5. The Melwood Support Services Records Summary Form (personal social, educational, family records)

Staff members from each of the five areas compose an interdisciplinary team which formulates long-range goals in each of the five areas from the information obtained. Following is an example of one assessment tool, the Melwood Prevocational Evaluation Form, and how it addresses the needs related to work adjustment.

The Melwood Prevocational Evaluation Form is a scale, utilizing a pretesting and a periodic posttesting procedure, that serves as a basic work adjustment evaluation tool. From the Prevocational Evaluation Form, a prioritized list is complied by the ITM of all items showing a need for development or improvement. This list establishes each individual's long-range work adjustment goals. Priority areas are established in cooperation with the trainee. Thereafter, a Contract and Short-Term IPP records (1) the behavior or attitude to be addressed, (2) training methods by which to effect change, (3) the measurements which show when the behavior or attitude has been changed successfully, and (4) the rewards to be earned. The final step takes the daily recorded information and places it on a graph which visually shows both baseline ability and the level and rate of development. An example of The Melwood Prevocational Evaluation Form, Long-range Work Adjustment Goals, Contract and Short-Term IPP, and Behavior Graph is found in the Appendix.

Because of their importance in the above methods, several segments deserve further comment.

The Individual Prescriptive Program (IPP) provides the underlying method for carrying out the curriculum criteria. An IPP is drawn up after the evaluation process and specifies the overall goals for the trainee. From this determination, short-term objectives are developed on a weekly, monthly, and quarterly basis. The instructor, in agreement with the trainee, sets priorities among the short-range objectives. As much as is possible, only one goal is explicitly worked on at a time. The IPP objective casts the overall goal into a *behavioral* framework in which the goal will be accomplished. It stipulates the behavior to be performed, the context surrounding the behavior performance, and the criteria by which the objective will be evaluated.

The instructor lays out a procedure which explains what will occur in transactions between the instructor and the trainee, between the trainee and the work assignment, or between the trainee and other individuals, as is appropriate. In the prevocational program, greenhouse work serves as the context for procedures which have proven to be applicable in other work environments as well.

Whereas procedures explain what the normal behavioral transactions are to be, techniques are interventions that the instructor utilizes to change the trainee's inappropriate behavior. These interventions range from reinforcement techniques to timeout periods and may include restructuring situations or instituting contingency programs. The development of a positive, active instructor-trainee relationship is vital to create a real motivational desire to effect positive change.

Rewards/costs are utilized with trainees to support their motivation and movement toward short-range goals. Rewards used at the prevocational level are selected as appropriate for the developmental level of the trainee. Contracts are used to make explicit the required behavior and the expected reward while documenting trainee willingness and desire to learn.

A recordkeeping system is established to provide a daily charting of the behavior. In many cases it is convenient for the instructor to break up the day into two- or three-hour segments, or perhaps to use half-hour periods for tracking the behavior of the trainee. The recordkeeping system is essential to carrying out the trainee's program: recordkeeping is not an after-the-fact notation but is integral to promoting change of behavior, since marking the chart is simultaneous with the behavior's occurrence and is observed by the trainee. The charts are reviewed with the trainee daily and/or weekly to emphasize the importance of the target goal.

Evaluation

The IPP format includes an evaluation criterion of each behavior as it is worked on.

A criterion describes the behavior and how often it must be performed to be considered complete and within the repertoire of the trainee, for example, "Refrains from interrupting a speaker . . . throughout the day for 15 consecutive days." The instructor must judge what criterion is realistic for each trainee to accomplish for each behavior, yet the criterion must adequately reflect the demands of the real world. A general norm of adequacy of behavior performance for some training programs has been the performance of a behavior over 15 consecutive working days at 90 percent to 100 percent consistency. A weekly charting of the behavior is kept on file. These charts and goals are available to other instructors to prevent inconsistency among staff members.

A monthly, and usually weekly, review of the goals is held with the trainee to ensure trainee awareness and cooperation. Productivity and efficiency of the trainee in greenhouse tasks also are monitored through the use of the time trial procedure (refer to Chapter 9). The time trial provides a baseline of trainee productivity and is also the basis of wage rates.

Greenhouse Activities

The instructor organizes greenhouse tasks for training functions first and then for work completion, although often these two can be blended equally.

Greenhouse tasks are chosen in cooperation with the grower of a production line, if there is such in the operation. Soil mixing, washing pots, stick growing, etc., are examples of such tasks. Two examples of how tasks are organized for personal adjustment goals are:

1. ***Responsibility*** - A trainee is assigned a task of filling five pots with premixed soil. Soil, pots, and work area are designated with an explanation (verbal and behavioral demonstration) of what the trainee is to do. A time period is set and the instructor checks to see that the five pots get finished. A check mark is recorded with the accomplishment of the task. (Note: for a given trainee at this level of responsibility, completion of the task with or without prompting may not be the issue, whereas completion of the task without prompting may be the goal at subsequent levels.) A simpler example of responsibility is the assignment for the trainee to present himself/herself at the work station at a given hour upon arriving at the training center.
2. ***Participation in Group Activity*** - The instructor assigns three trainees to transfer 50 pots from storage space to bench in teamwork with a fourth trainee who is especially interactive, thus extinguishing purely self-stimulating behavior.

In the context of a larger, production-oriented operation, this program (or these trainees as a crew) may be responsible for a whole work area or for relatively minor quantities of work. This decision again depends upon the needs and capabilities of the trainees and the flexibility of the production unit.

Greenhouse Space and Equipment

For a unit of prevocational training, a minimum of 1,500 square feet is recommended. If this unit is integrated with a vocational or co-op production unit, separated space requirements may be reduced. The program is defined by the training that goes on, not by the amount of space utilized nor the production carried on.

Staffing

Instructor selection may be related to the manner in which this unit is associated with a production line and to the availability of the grower to the instructor.

The prevocational training instructor is a person who is skilled in training individuals in need of personal, social, and work adjustment skills. This person need not have in-depth horticultural knowledge or background, although the ability to learn the essential greenhouse tasks and techniques is necessary. This person must possess skills in assessing individual strengths and weaknesses, in modifying behavior, and in motivating individuals. The prevocational instructor is much more rehabilitation focused, although he or she must be able to come to grips with the demands of the horticultural environment. See the Appendix for job description and personnel recruitment sources.

Trainee Selection and Wages

A maximum of ten individuals can be engaged in a prevocational training unit with one instructor. A lower ratio would be preferable. However, several such units may be used to support the production of a large greenhouse complex. Persons who are severely disabled in their personal and social functioning, who have skills in self-care, grooming and toileting, and who are not destructive to themselves or others are eligible. These individuals' productivity levels are generally lower than the 25 percent of minimum standard although this is not the criterion by which they are placed in this program. The criterion for selection is related to the program goals and to a curriculum in keeping with those goals rather than to the person's IQ functioning. For instance, "Joe" may be able to do pottings and cuttings at a rapid and accurate rate. But since the prevocational evaluation test shows an overall low score because of inappropriate behavior, he is a suitable candidate for the prevocational program.

Wages are paid to trainees for the number of hours they spend in income producing activity. Wages are based upon accuracy and efficiency of the trainee as evidenced through time trials of certain greenhouse tasks (see Chapter 9).

Budget

A model budget has been developed to show basic income and expense items. See Figure 6. Its value is only in terms of an overview. Each individual program budget necessarily will reflect its own special income and expense items. It is hoped that the percentage of self-earned income to expenditures will stand as a realistic indicator of program potential.

FIGURE 6

GREENHOUSE PREVOCATIONAL BUDGET MODEL

This model budget is based on a work unit of 10 trainees supported by 2,000 square feet of actual greenhouse growing area. A dollar figure of $8.00 per square foot is used to project annual sales potential. Thus,

2,000 square feet × $8.00 = $16,000.

Determination of trainee wages is based on 1,000 hours worked annually per trainee multiplied by a prevailing wage rate of $4.00 per hour multiplied by the average trainee productivity rate of 30 percent. The formula is:

1,000 hours × 10 trainees × ($4.00/hour × 30% productivity) = $12,000

Note: self-earned dollars represent 23 percent of the budget. Greenhouse mortgage expense includes only the purchase cost of the polyethelene greenhouse and equipment. It does not include labor costs for constructing the greenhouse nor installing the various systems. The expense estimate is based on a 3,000 square foot area at a cost of $6.00 per square foot equaling $18,000 financed for 15 years at 6 percent interest (Small Business Administration low rate, Handicapped Loan Program).

INCOME		
Self-earned Sales	$ 16,000	
Other	52,815	
	$ 68,815	$ 68,815
EXPENSES		
Personnel		
Grower/Instructor	12,000	
Aide	8,000	
Trainees (10)	12,000	
Fringe/Taxes (15%)	4,800	
	$ 36,800	
Other		
Greenhouse (poly) Mortgage	$ 1,818	
Vehicle Loan	4,000	
Vehicle Operating	2,000	
Cultural Products (30% of sales)	4,800	
Heat/Utilities	4,000	
Repair/Equipment	3,000	
Telephone	1,000	
Water	1,000	
Insurance	800	
Advertising	1,000	
Administrative Overhead (8%)	5,097	
Miscellaneous	3,500	
	$ 32,015	$ 68,815

Chapter Thirteen

GREENHOUSE VOCATIONAL TRAINING PROGRAM DESIGN

Goal

To train units of eight to 10 individuals in greenhouse skills, preparing them to function productively at no lower than 50 percent of the minimum standard and to approximate the industry standard in accuracy and speed on skill level.

Objectives

1. To train individuals in specific greenhouse skills.
2. To increase their productivity to beyond 50 percent of the minimum standard.
3. To eliminate any remaining personal and social adjustment problems that prevent their achieving productivity.
4. To provide a suitable training curriculum.
5. To reach a sales goal of $20,000 to $50,000 (depending upon square footage and wholesale or retail), *or* to provide significant labor support to a production program equal in value to $20,000 to $50,000.

The focus in this program is the training of specific skills rather than of general personal and social habits. Accuracy and speed become important along with the ability to master more complex instructions. These trainees also must handle an increased amount of work load and pressure.

Curriculum

The curriculum consists of a set of skills across the full range of greenhouse tasks. Completion of this training indicates demonstrated ability to work independently or semi-independently in a greenhouse under the direction of a grower. However, this program imparts horticultural skills, not horticultural knowledge concerning the cultural aspects of growing plants.

A vocational curriculum must correspond with the growing methods and crop selection of a marketable product line. It is tempered by the capability of trainees only insofar as certain tasks, such as chemical application, may not be delegated to this group. Additionally, a curriculum in a given program must respect the preferences of the grower in terms of the methods chosen to propagate crops. A curriculum may become specialized to the extent that the production process itself is specialized.

Two sample curricula are presented in the Appendix. The first is from the Clinton County Chapter, New York State Association for Retarded Citizens, Inc. horticultural program. It consists of a series of 12 tasks, each of which is thoroughly task analyzed for training purposes.

The second is the Melwood Occupational Sequence Log which is less thorough in its task analysis but more specialized in its three areas of growing, production, and shipping. Note that evaluation criteria are integral in each curriculum. The items in the Melwood curriculum are presented in a developmental sequence of least difficult to most difficult. While this is a preferred mode of teaching skills, a program that is production oriented cannot always afford to start a trainee at the beginning stage and work through each skill one at a time. Tasks may be undertaken to complete part of the production process, not strictly for the sake of learning the skill in sequence. Nevertheless, in a greenhouse complex with at least three crop rotations per year, there is more than enough opportunity to come back to learning and relearning each skill.

Method: Task Analysis

Task analysis is the general approach used in training handicapped individuals in specific skills. Task analysis involves breaking down a skill into its component parts sufficiently for an individual to follow each step behaviorally. The extent to which a skill is broken down depends on the ability or need of the trainee; more capable individuals do not require as many explicit steps whereas less capable individuals profit from numerous steps. Many training centers have implemented a task analysis approach to training the handicapped, hence its application to horticulture is not unique. A master's thesis by John D. Morris,[1] entitled *A Vocationally Oriented Horticulture Skill Training Program for the Mentally Retarded Adult Using Task Analysis*, describes the application of task analysis in the horticulture center.

Paul Sanger, Horticulture Program Coordinator at the New York State ARC, Clinton County Chapter, said concerning the use of task analysis in the horticulture program:[2]

> I have discovered that, when using task analysis, the one-to-one trainer-trainee ratio is the most effective method of teaching greenhouse skills, as many of these skills are complex in nature. . . . The relationship between the trainer and trainee is of great importance. It appears that the higher the level of consistency in the trainer role, the more quickly a trainee learns a task. Task analysis provides for a highly structured relationship for the trainer and trainee to work within. The trainer has an opportunity to use a number of various

---

[1] John D. Morris, Alvin Community Living School, 913 E. Old Galveston Road, Alvin, Texas 77511

[2] Personal Communication.

training techniques and receives immediate feedback from the trainee.

An instructor in charge of a crew of 10 individuals may not realistically be able to provide such one-to-one training. While this optimum situation can be an ideal toward which to work, it is also possible to set up tasks in a stepwise manner for use with trainees in small groups. One modification used by two Melwood instructors is a minimanual on growing tasks made up of a series of Polaroid photos showing the correct and incorrect steps in growing methods.

Sanger reports the following criteria that trainers at Clinton County ARC have found helpful in implementing task analysis:

1. The trainer should always present himself/herself as an equal to the trainee.
2. For each task to be considered learned, all substeps must be tested and passed for a minimum of four out of five days (not necessarily consecutive days).
3. A maximum of five trials each day need to be recorded.
4. No allowance nor special consideration is to be given for a trainee's inability to read.
5. Verbal prompting during training should be presented in question form whenever possible.
6. Minimized eye contact combined with simple gestures usually has more training value than verbal instructions/corrections when prompting.
7. A task "review" should be considered a trial failure.
8. Addition of substeps to a task is appropriate *if needed*. Excess substeps, when trainee initiated, should be discouraged but clustering of substeps is encouraged.
9. Substep order of performance may not be altered.

Task analysis does not require the modification of the greenhouse environment. An efficient and well-equipped work area will be conducive to the use of task analysis.

Implementing task analysis requires a training plan or program that includes specifying the task objective to be mastered, the method to be used (e.g., forward chaining, backward chaining, etc.), and the criteria for accomplishment. A chart should be drawn up showing the task steps to be followed and their completion record. Figures 7 and 8 are a training plan and a chart of a client from the Clinton County ARC. The Appendix shows additional examples of a training plan and task analysis and data sheet.

Evaluation

Evaluation is the process of measuring the outcome of the training program and the level of production performance. It must be emphasized that recordkeeping is essential to document the effectiveness of the curriculum and training methodologies. See Evaluation Sections in Chapters 12 and 14 for descriptions of evaluation and time trial procedures.

FIGURE 7

INDIVIDUAL TRAINING PROGRAM
ARC Horticulture Program
GREENHOUSE

Client Trainee: ____________________ Client Number: ____________________

Training Area: Greenhouse

Task: Transplanting: Market Packs

Objective: For trainee to learn the task of transplanting seedlings into market packs, to reach criteria of passing grade on 4/5 consecutive trials.

Teaching Method: task analysis, one to one Training

Materials: market pack, flat of seedlings, soil, soil firming tool, label tag, pencil

Teacher: ____________________ Mastery Criteria: 4/5 trials passing grade

How Data Is To Be Collected: ____________________

Date Training Is Begun: ____________________

Date Completed: ____________________

When Scheduled: ____________________

COMMENTS:

FIGURE 8

Horticulture Skills **Task — Transplanting: Market Packs** **Total no. of sub-steps — 15**

Trainee ____________________
Trainer ____________________

Pass A — No Help
Fail 1 — Verbal Help
2 — Demonstration
3 — Physical help
4 — Not completed

Task Analysis & Data Sheet

	Date: PT	1. 4/2	2. 4/2	3. 4/2	4. 4/2	5. 4/2	6. 4/3	7. 4/3	8. 4/3	9. 4/3	10. 4/5	11. 4/5	12. 4/6	13. 4/6	14. 4/6	15. 4/9	16. 4/9
1. fill market pack with soil to top of rim		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
2. hold market pack in two hands — tap on work surface		4	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
3. pack soil lightly with soil firming tool		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
4. make two rows — length of market pack		4	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
5. with finger — make three evenly spaced holes in first row		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
6. remove seedling from flat with fingers		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
7. place seedling in 1st hole — same soil level as in flat		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
8. level out soil around seedling		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
9. gently press soil around seedling — soil in contact with roots		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
10. repeat steps 7 - 8 - 9 until row is completed		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
11. go to second row — repeat steps 6 - 7 - 8 - 9 - 10		A	A	A	A	A	A	A	A	A	A	/	A	A	A	A	A
12. write initials on label tag		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
13. write date on label tag		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
14. write plant name on label tag		A	A	A	A	A	A	A	A	A	/	A	A	A	A	A	A
15. clean work area		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
16.																	
17.																	
18.																	
19.																	
20.																	
21.																	
22.																	
23.																	
24.																	
25.																	

Greenhouse Activities

Greenhouse activities relate to the greenhouse size (square footage available) and the type of plants grown in this greenhouse area. As stated earlier, the minimum square footage for successful training of a unit of 10 persons is 1,500 square feet. However, if significant self-earned dollars are part of the program goals, then a minimum of 6,000 square feet is recommended. The range of crop selection is wide but greatly depends on the training goals and the self-earned income expected.

Greenhouse activities are developed around a full range of tasks selected to reflect a real work environment and to coordinate with the training and production income goals. Limitations on greenhouse activities are based on the abilities of those being trained. For example, a trainee is not given the job of watering until he/she has demonstrated prior use of good judgment. Greenhouse vocational training concentrates on development of job skills rather than on work adjustment. Hence, the atmosphere is work and production oriented.

Greenhouse Space and Equipment

Growing space of 6,000 square feet is recommended if a moderate to significant self-earned income is expected. More or less space may be used to accommodate training depending upon other design factors (goals, capital, etc.) and whether this program is coordinated with a production operation. (See Chapter 17, "Physical Plant and Technical Requirements," for further details.)

If this unit is integrated with a work co-op production system, these individuals usually will work as a "crew" on certain areas of production, but they need not be limited to certain tasks or to a certain space. As in the prevocational program, vocational training is defined by the kind of training provided, not by the amount of space utilized nor by the production tasks that are carried on.

Staffing

The instructor ideally would be the two- or four-year graduate of a horticultural therapy/rehabilitation program, possessing specific horticultural knowledge to go with rehabilitation training ability. The instructor must be able to relate both to training needs and to production needs, and to organize work tasks in ways that fit the trainees' need to become skilled workers. The instructor and his/her crew may work independently of or in conjunction with a production oriented greenhouse. But where the program exists independently of a production operation, the instructor will have to organize and develop the marketing outlets and strategy if self-earned income is to be important. (See also Chapter 7, "Personnel Issues")

Trainee Selection and Wages

A maximum of 10 individuals per instructor covering approximately 6,000 square feet of growing space is most suitable. Persons who specifically desire greenhouse skill training and/or basic vocational skill development via the greenhouse training/production environment should be selected for this program. These individuals should have surpassed the minimum requirements of the prevocational program and should be judged capable of reaching co-op employment or competitive employment levels. Program planners also must consider whether this training is relevant for a specific individual.

Trainee wages are paid according to the minimum standard prevailing wage or a percentage of that wage based upon appropriate time trials. (See Chapter 9) Wages are paid to trainees for the number of hours that they spend in income producing activities, including their training activity which has production output.

Budget

Figure 9 shows a model budget with basic income and expense items for a vocational greenhouse training program. Each individual program budget must reflect its own special income and expense items.

FIGURE 9

GREENHOUSE VOCATIONAL BUDGET MODEL

This model budget is based on a work unit of 10 trainees supported by 4,000 square feet of actual greenhouse growing area. A dollar figure of $10.00 per square foot is used to project annual sales potential. Thus,

4,000 square feet × $10.00 = $40,000.

Trainee wages are based on 1,200 hours worked annually per trainee times a prevailing wage rate of $4.00 per hour times an average trainee productivity rate of 40 percent. The formula is:

1,200 hours × 10 trainees × ($4.000/hour × 40% productivity) = $19,200

The greenhouse mortgage expense includes only the purchase cost of the polyethelene greenhouse and equipment. It does not include labor costs for constructing the greenhouse nor installing the various sytems. The expense estimate is based on a 6,000 square foot area at a cost of $6.00 per square foot equaling $36,000 financed for 15 years at 6 percent interest (Small Business Administration low rate, Handicapped Loan Program).

Note: self-earned dollars represent 37 percent of the budget.

INCOME		
Self-earned Sales	$ 40,000	
Other	68,418	
	$108,418	$108,418
EXPENSES		
Personnel		
Grower/Instructor	12,000	
Aide	8,000	
Sales Specialist	10,000	
Trainees (10)	20,000	
Fringe/Taxes (15%)	7,250	
	$ 57,250	
Other		
Greenhouse (poly) Mortgage	$ 3,637	
Vehicle	4,000	
Vehicle Operating Costs	2,000	
Cultural Products (30% of sales)	12,000	
Heat/Utilities	7,000	
Repair/Equipment	5,000	
Telephone	1,000	
Water	1,500	
Insurance	1,000	
Advertising	2,000	
Administrative Overhead (8%)	8,031	
Miscellaneous	4,000	
	$ 51,168	$108,418

Chapter Fourteen

GREENHOUSE WORK CO-OP EMPLOYMENT

Goal

To employ units of five workers each in a greenhouse employment co-op business in the community.

Objectives

1. To generate a volume of production and sufficient sales income per unit to support a grower, aide, salesperson, and five co-op workers and to meet operating expenses.
2. To earn $75,000 per year per unit.
3. To employ a minimum of 75 percent handicapped workers in relation to the total co-op labor force.
4. For each worker to receive no less than 50 percent of the established prevailing wage for work performance and to receive fringe benefits equal to those for other agency personnel.
5. To provide steady, 12-month, full-time employment.

The objective of co-op employment, compared with that of the prevocational and vocational training programs, is production rather than services to trainees. The figures may change from program to program, but the objective is to conduct business in the commercial marketplace, producing and selling plants in volume. An employment co-op demands the full employment of handicapped persons at a business in which they provide 75 percent or more of the direct labor force. Thus, the co-op greenhouse may include nonhandicapped persons, such as a grower, throughout the labor force. Indirect labor personnel, such as administrators and accountants, are not counted among the nonhandicapped personnel.

Product Line

The product line, or cropping schedule, is formulated in conjunction with the sales personnel and marketing strategy. The grower then establishes a system for production and quality control throughout the product line. Training is replaced with regularly scheduled work tasks and employees work as a crew or on individually designated jobs. The work is laid out in accord with

84

basic growing requirements except where the disability needs of the workers (e.g., wheelchair-bound individuals) may demand special consideration. A product line is based on yearly goals of sales and on which plants are needed for seasonal crops or for year-round purchase.

Operational Methods

The methods of implementing the product line are determined to a great extent by the production and quality control systems utilized by the grower. Since the greenhouse co-op is not used for training, cost effectiveness and labor efficiency are crucial in the greenhouse operation.

The grower first chooses what crops to produce, based upon what sells in the marketplace. Co-op employees are expected to be capable of a variety of tasks under supervision, and their ability level affects the choice of crops in a relatively minor way. Production programming also looks at how much of the grower's time is allocated to insuring the necessary culture conditions as well as providing employee supervision and administration. If the grower must spend all of his/her time overseeing the direct labor force, there remains little time to perform other managerial decisions and tasks. The choice of crops naturally must take into consideration the culture conditions in the greenhouse.

Next, the grower determines how many of each variety is targeted for the year's production, what size pots and baskets should be produced, etc. The assessment of crew capability and efficiency determines, for example, whether it is more feasible and profitable to buy bulk quantities of finished off poinsettias or to grow them from cuttings. Cost effectiveness requires getting the most money for the labor spent. The use of both labor intense production and bringing in crops for finishing off enables a greenhouse operation to maximize the usefulness of its growing space and of its labor force.

Tasks required for production are laid out by the grower in sequences demanded by the growing schedules. Tasks cover the full range of work in a greenhouse, including mixing soil, cleaning pots, rooting cuttings, spacing and transferring pots, weeding out baskets, and pinching. Certain tasks requiring critical judgment or safety precautions (such as watering, chemical application) may be excluded from the task list depending upon the disability and the skill level of the population.

Sequences of work may be arranged into daily and weekly jobs and individual or team tasks according to employee efficiency and the grower's production methods. Jobs and their incremental steps are arranged by each grower according to his or her own methods of growing — there are no exclusive "right ways." However, work can be designed to capitalize on worker routine. For example:

- Procedures for mixing soil are systematized.
- Numbers of pots per bench and areas for certain varieties are designated.
- Specific tasks are performed on certain days of the week and at the same times of the day.
- Tools and materials are kept in the same place.

The grower's production schedules are based on completion dates. Working backward from these dates, the grower determines when to start rootings or when to bring in finished off plants. Growing schedules are determined by plant growth and development, not be employee efficiency.

Evaluation

In the work co-op greenhouse, evaluation consists of using time trials to assess the efficiency of the worker. The time trials (examples provided in the Appendix) for greenhouse work must relate to the kind of work a given employee generally performs. If an individual performs a variety of tasks, he should be evaluated across a representative sample of these; if he works on only a few jobs or only one task, he may be evaluated only on those specific duties. In some cases, a work co-op may wish to include an evaluation of other issues pertaining to the work performance of the employee. If so, these items must be spelled out clearly in a personnel policy and applied uniformly with all workers. Thus, such performance criteria as attendance, neatness, safety, etc. should be part of a periodic general personnel evaluation that does not also affect the wage rate as does the time trial procedure. The use of these latter personnel issues may be an index of the need for further training or may serve as a record for a future competitive employment reference.

Greenhouse Space and Equipment

It is recommended that a co-op greenhouse operate with an average of 6,000 square feet of growing space per unit of five co-op workers, an aide, and a grower. Smaller operations are possible but would find it increasingly difficult to develop the volume of production necessary to be financially feasible. Chapter 17 on "Physical Plant and Technical Requirements" provides an indication of minimum needs for a small operation; these may be multiplied linearly to estimate the costs and equipment needs for a work co-op operation.

Staffing

An experienced grower who is knowledgeable in horticulture and capable of directing production schedules for volume sales is required in the work co-op model. The grower must be licensed to handle and supervise registered chemicals. The grower is also a manager who organizes tasks and delegates work responsibilities to be carried out independently. If there is no other individual to handle business management, the grower must administer the accounting for production costs and income.

One or more crew foremen or aides who are knowledgeable about growing methods or who can be trained in such tasks as watering and chemical application are necessary at the point when the greenhouse space exceeds 6,000 square feet. These individuals may perform tasks that are beyond the ability of some trainees, and they may need to be available for weekend hours.

Greenhouse annual sales of less than $50,000 may be generated with only the help of a part-time sales person. A larger income, as exemplified in the budget in Figure 10, will require a full-time marketing sales specialist.

Employee Selection and Wages

The ultimate criteria for hiring individuals as co-op workers are their productivity and skill. As referred to above, a unit of a co-op employment program can efficiently employ five individuals, although minimum and maximum numbers depend upon individual wages, gross income from sales, and productivity of the operation.

Selection of co-op workers is based on their competency and efficiency, unlike in the prevocational or vocational training program where they are selected because of their need for that training. Competencies of greenhouse co-op workers include:

Personal Adjustment - minimal or eliminated social and individual eccentricities, the absence of inappropriate behavior, and the presence of appropriate social skills for the work setting.

Work Adjustment - motivation, consistent attendance, endurance, responsiveness to instructions, awareness of quality, respect for and proper use of equipment and safety precautions, and following the chain of command.

Productivity and Skill - job-related capability and efficiency in specific skills as demonstrated by work sampling and time trials; also motivation, consistency, and capability indicated in records from a previous training program.

Upon application for co-op employment, it is important that an individual be thoroughly evaluated, documenting a capability of 50 percent or higher productivity, and that work adjustment and vocational skill training has been successfully completed.

Wages paid to co-op employees are based upon an hourly rate or a piece rate. With the variety and nature of greenhouse work, it is usually desirable to pay on an hourly basis. Department of Labor regulations concerning sheltered employment labor and wages must be adhered to, including the acquisition of certificates for wages paid at lower than minimum rates. Hourly rates are calculated using the time trial method or an equivalent. See Chapter 9.

Budget

A model work co-op greenhouse budget has been developed to show basic income and expense items. See Figure 10. Each individual program budget will, of course, reflect its own special income and expense items. It is hoped that the ratio of self-earned income to expenditures will stand as a realistic indicator of program potential.

FIGURE 10

GREENHOUSE WORK CO-OP BUDGET MODEL

This model budget is based on a work unit of 15 co-op workers supported by 15,000 square feet of actual greenhouse growing area. A dollar figure of $16.00 per square foot is used to project annual sales potential. Thus,

15,000 square feet × $16.00 = $240,000.

Trainee wages are based on 1,820 hours worked annually per co-op worker multiplied by a prevailing wage rate of $4.00 per hour multiplied by a 75 percent productivity rate. The formula is:

1,820 hours × 15 workers × ($4.00/hour × 75% productivity) = $81,900

The greenhouse mortgage expense includes only the purchase price of the polyethelene greenhouse materials and equipment. It does not include labor costs for constructing the greenhouse nor installing the various sytems. The expense estimate is based on an $18,000 square foot area at a cost of $4.00 per square foot equaling $72,000 financed for 15 years at 6 percent interest (Small Business Administration low rate, Handicapped Loan Program).

Note: self-earned dollars represent 78 percent of the budget.

INCOME		
Self-earned Sales	$240,000	
Other	68,466	
	$308,466	$308,466
EXPENSES		
Personnel		
Grower - Manager	15,000	
Production Specialist	10,000	
Propagation Specialist	10,000	
Co-op Workers (15)	81,900	
Sales Specialist	15,000	
Driver/Aide	7,500	
Part-time Help	4,000	
Fringe/Taxes (18%)	25,812	
	$169,212	
Other		
Greenhouse (poly) Mortgage	$ [illegible],275	
Vehicle Note	4,000	
Vehicle Operating	4,000	
Cultural Products (30%)	72,000	
Heat/Utilities	23,000	
Repair/Equipment	5,000	
Telephone	1,500	
Water	5,000	
Insurance	2,000	
Advertising/Commissions	8,000	
Administrative Overhead (8%)	24,479	
Miscellaneous	5,000	
	$139,254	$308,466

NOTES

Chapter Fifteen

PRODUCTION AND PROPAGATION SYSTEMS

Following the formulation of goals and production programming in the greenhouse operation, the grower must determine what products will be grown. Random selection of plants and little forethought to production numbers will result in marketing and production problems. A significant production line and sales income must have an integrated management system.

Four factors go into building the production/sales system:

1. What to grow
2. How much to grow
3. How to grow in the given greenhouses with the labor, programming, and equipment available
4. When to grow materials

Some of these factors are more or less affected by the rehabilitative nature of the program.

What to Grow

What to grow is determined by what the horticultural center can sell and the relative importance of sales to the program, what can be produced, and the volume that can or must be produced, all of which interact with one another and should not be treated independently. There are five rules of thumb about what to grow in the greenhouse operation:

1. Grow what will sell. If self-earned income is important to a program, this is the first and most important guideline. A market analysis by a professional or an informal survey of nearby garden centers offers a good start. Later, experience combined with market trends will yield the best answers.

   The grower must work closely with the sales specialist. There is little value in growing plants for which there is no market. (See Chapter 18, "Greenhouse Sales").

   - Are there wholesale customers and what do they need?
   - Are community building sales significant?
   - Are retail sales (which demand a large variety) planned?
   - What outlets are available for seasonal crops, and in what quantities can these crops be marketed?
   - Are sales to be channeled through a broker?

2. Grow what your labor force and physical plant can support. Delicate varities usually are not suitable for the work co-op greenhouse. The grower can choose from a wide variety of "weed crops," tropicals, bedding plants, and seasonals. In a vocational training program or work co-op, there should be little worry over the choice of plants based upon the persons handling them. The primary concern is what will sell.

   In starting out, it is wise to select hardy varieties and to limit the selection until the training and production systems are perfected. Buying in crops which require only a short period of time for finishing off eliminates production time during which problems could occur. The selection of some crops (or the methods of growing) is made precisely because they provide work suitable for training purposes (i.e., routine, simple tasks). See "Basic Horticultural Greenhouse Production Schedule" in Appendix.

3. Grow what provides a good dollar return.
   - Some selections will be good for stable selling power.
   - Some crops have high retail/wholesale value and low production cost.
   - Some crops may not have a high dollar return but will attract customers to the sales.
   - The method of growing affects the dollar return (see How to Grow below).
4. Some crops are propagated for their training value above and beyond their sales value and may be propagated without any intention to sell. This practice should be limited, however, since bench space is at a premium in a production line.
5. At some early point in the program's development, it is recommended that one or two unusual varieties be grown to establish a unique name or reputation for the center.

How Much to Grow

The answer to this question depends upon the relative importance of self-earned income and upon the square footage of space available. Corporate sales goals must be drawn up first on a yearly basis. These goals should take into account production capability from the multiple programs (i.e., prevocational and vocational training and work co-op) if they exist under the same production system. From this figure, the grower works in conjunction with the sales specialist to devise estimates of which crops will produce what incomes.

Corporate or annual projections are broken down into monthly figures. These monthly targets vary depending upon the nature of one's market outlets. However, some generalization may be gathered by looking at neighboring industry figures. The following table presents percentages of dollar volume sales from Melwood Horticultural Training Center's Cropping Schedule of FY 1979-80.

July	5%	Oct	4%	Jan	3%	Apr	15%
Aug	5%	Nov	8%	Feb	6%	May	17%
Sept	4%	Dec	17%	Mar	9%	June	7%

The program sets weekly and perhaps even daily quotas which may be geared for certain types of sales or for certain market outlets in the case of building sales.

How much to grow also depends upon the square footage of growing space available. Whereas labor is the most costly expense, bench space is the most valuable asset: getting the most out of the available area yields more plant production. Space saving features can be devised: hanging cables through the greenhouse (for hanging baskets) and building double tiered benches (lower tiers can only be used for shade tolerant crops) increases growing space and thereby adds quantity to production.

How to Grow

How to grow addresses not how one grows plants in the training or production greenhouse but rather what factors influence growing methods in a greenhouse in light of programming and the handicapped population.

1. **Grower's preference** - First and last, the greenhouse operation is about growing plants, and each grower has his or her own preferences in growing methods. The knowledge and experience of the grower must be respected. Training can be adapted to a variety of methods through the tasks and through good organization.
2. **Physical building and equipment** - The only notable element that affects growing methods here is the extent to which a greenhouse operation utilizes various automatic systems, such as misting, watering, ventilation. These time and laborsaving devices can provide accuracy in watering and humidity requirements. They usually are needed only for larger and more rigorous crop schedules. Because of the systems' added cost and technical demands, most co-op or training operations often will initiate operations using manual controls. An automatic misting system for propagation benches is an exception.
3. **Labor intensity desired** - One of the common beliefs about growing plants is that, once started and given enough light and water, they appear to need little attention. This is not true, of course, but the amount of labor put into the initial propagation and then the early maintenance is greater than that required for plants to complete their growing period. The need for labor is intensified by (1) growing large numbers of plants with short growing cycles, and (2) finishing off stock that is almost ready for sale. In making this decision of how to grow and how much to grow along with organizing the tasks, each program develops its training or production processes. The amount of labor desired for programming (i.e., training) purposes must be integrated with the production and sales demands in order to result in efficiency and net income.
4. **Choice of crops** - The selection of more delicate crops may direct the method of growing itself or, on the other hand, may warrant the buying of some varieties wholesale for finishing off. This is often the case with lilies for Easter or with large quantities of poinsettias for Christmas. Each

grower and sales specialist must make these decisions based upon many factors already indicated.

5. **Cost efficiency** - The grower must take into account that growing certain crops from seeds or cuttings takes very little initial expense; but as the crop grows and multiplies, time and bench space are consumed (along with heating fuel in winter). The potential for crop loss increases geometrically in the early rooting and cutting stages. This is not an argument against growing plants from seed but a demonstration that cost efficiency must be considered in putting together a schedule of what to grow and how to grow it.

When to Grow

When to grow means "what plants in what size pots do you want to deliver on what date?"

> It's the week before Christmas, and you have 1,000 poinsettias sitting in your greenhouse but not a single one ready for blooming for two more weeks!
>
> You're ready for your first big building sale and you have 500 plants in 10 varieties, but they're all in 6-inch baskets—nothing larger, nothing smaller!

The sales specialist and the grower should plan 6 to 12 months in advance. This planning affords the grower the time to organize a method of growing, to plan for different varieties and sizes of plants, and to determine suitable tasks for the training program or production line. Seasonal products (at Christmas, Valentines Day, Easter, Mother's Day) allow for very little margin of error. Total crop sales can be lost for miscalculations of days or weeks. If plans are proposed for bringing in large quantities of plants for a final 5 to 8 weeks of finishing off, then an appropriately large amount of bench space must be made available to handle the volume, and suitable labor must be available for the increase in work (watering, fertilizing, etc.)—another indication of the need for planning. Crop scheduling is also closely related to other sales targets in the marketing strategy. Even though high volume sales of specific varieties may occur seasonally, a more regular sales income is usually desired and must be generated from the sale of a variety of crops in different sizes throughout the year.

Chapter Sixteen

QUALITY CONTROL*

Importance

The importance of quality control in greenhouse work, whether under training or work co-op auspices, cannot be overstated. Plants that are sold under the greenhouse center's name will build a reputation for the center reaching far beyond the individual purchaser, and that reputation will affect future plant sales and, in general, the quality of the training or work co-op program. The standard by which plant quality—that is, healthiness and aesthetics—is measured should be the same as in a commercial greenhouse. Even when all procedures have been performed correctly but the chrysanthemums turn out to be of inferior quality, they should not be sold as "good enough for the handicapped." This substitution for quality will severely damage the image of the center and will stay with future marketing ventures for a long time. Moreover, the common rule of the marketplace still holds true: the better the quality of the plants, the better the price they will bring. Superior quality may not always be reached, but under no circumstances should a program give up striving for it.

Quality Factors

Quality in plant production is defined by healthiness and by aesthetics. The first factor is translated as insect-free and disease-free plants which are physically strong and rich in color. Infection of plants is countered by precautions and by constant inspection of plants. Insecticides and fungicides must be employed properly and in accord with safety regulations. Prevention also can be taken by purchasing plant materials such as soil, seedlings, and finished off plants only from reputable dealers. The cleanliness and tidiness of the greenhouse itself enhances the preventive efforts of the staff. Water contamination or toxicity is extremely destructive, and testing should be conducted regularly (See Chapter 17, "Physical Plant and Technological Requirements").

Quality in aesthetic terms is defined pragmatically as fitting the appropriate pot to the size and shape of the plant, keeping saleable products free of dead leaves, and ensuring the flush or budding of flowering crops at

---

*Significant contributions to this chapter have been taken from Louis Berninger's *Profitable Garden Center Management*, Reston Publishing Company, Inc., Reston, Va., 1978, as well as from Melwood's growers.

their appropriate time. Spacing pots and transplanting materials at crucial times yield well-shaped and healthy specimens. "Penny-pinching" in any of these areas will result only in inferior quality products with reduced sales and an oversupply of unsold goods, to say nothing of a bad reputation.

Quality Control System

Implementing a quality control system means establishing a methodical and orderly routine of keeping track of quality. The following is one example of a quality control system.

1. The grower should inspect all benches and plants at least once each week. The grower checks for (1) insects, (2) diseases, (3) nutrients (light, water, growth rate, temperature and fertilizer requirements), (4) spacing and repotting needs, (5) physical abuse or damage, and (6) quantity.
2. A record is kept on a Quality Control Sheet that lists the date, greenhouse number or area, bench number, plant variety, problem, person responsible for correcting a deficiency, the priority designated, and a completion record. See Figure 11.
3. The Quality Control Sheet results in a job list for the following weekly period. By indicating the person responsible and the priority of the job, the grower delegates responsibility in reasonable and appropriate terms and workers know what duties are expected of them regarding quality control. The priority designation establishes the relative importance of these jobs alongside the normal responsibilities. For example, "A" priority may demand immediate attention the following day, "B" must fit in with other duties, and "C" implies a task that follows all other responsibilities.

The weekly walk-through inspection keeps the grower up-to-date with the quality of all plants in production and provides a check on individuals' work assignments and the quality of their performance. Assignments may be made by the grower to an instructor and carried out by an instructor's crew.

FIGURE 11

PRODUCTION QUALITY CONTROL WORK SHEET

DATE: ______ ______________ HOUSE #: ______________

Bench #	Variety	Work To Be Done	Person/ Priority	Completion/ Comments
1-5 Air	5 HB - 8 HB Poinsettias	Keep moist, not wet. MIST 3 - 4 times per day for a week.	Regina A	
	"	DRENCH: 9/7 with Benlate & Dexon. 1½ tsp. each/gal. Wear boots & gloves.	Regina A	
	"	FERTILIZE: with 25-10-10 (Md. Special - in shed). Use Hozon & 3 lbs. in ½ a "clean"	A	
	"	trash can (12 gal.) Do this on 9/10 & 17.		
1 U	5 HB Hoya	Cut back to bottom of saucer. Dump Tips.	B	
2 U	4" Green Jew	Repot 2PPP 8 HB's, take to #6, B.		
2-3 U	5 HB Piggybacks	Bring as many as can from #6, B.		
2-7 U	Piggybacks	Use Morestan: 1½ tsp. per gal. Do not use Triton or any other chemical.		
6-7	8 HB Philodendron	DRENCH w/Systox: 4 c./12 gal. (½ trash can).		
8-10 A	Lower Poles	Use remaining 4 poles in #3 & 3 copper poles in front of #4. Could hang 5 HB's	Regina C	
	"	Poinsettias here.		
9-14	4" Mums	B-Nine once a week til flowers cralk open. (.5% Solution)		
8-9 U	4" - 5 HB Troutleaf	Drench when do - Poinsettias. Clean up dead tips. Try again w/hormoroot.		
9 U	8 HB Asparagus	Find hangers & hang over B4A.	B	
10-11 U	8 HB Swiss Cheese	Take tips from 11U & fill in 8 HB's on 10U. Use hormoroot.	B	
12 U	4" White Vein	Fill Rest Bench w/4" 8 across. Take tips from 4" & stick 2PPP.	B	
12-14 A	8 HB Hilli Ferns	Take from #4 (either B or LS/RS Air) & hang 6 across.	A	
	"	Let these dry a little!		

Chapter Seventeen

PHYSICAL PLANT AND TECHNICAL REQUIREMENTS

Program planners must consider a significant number of practical and technological issues before venturing on a sizeable greenhouse project. Beginning with a donated parcel of land or a small unused greenhouse does not guarantee that all other requirements will be forthcoming. This chapter discusses the essential physical plant and technical requirements to be considered. It is assumed that a program planner will consult local greenhouse operators, university horticultural experts, and, most importantly, representatives of greenhouse suppliers who service the local area. A prime consideration in planning must be the price of fuel and all petroleum-based products (plastic pots, fiberglass, poly) which are increasing in cost almost monthly.

Site Location and Acreage

The location of the greenhouse program, if possible, should be convenient to retail sales customers and in proximity to other markets. Also if possible, the property should be served by mass transit for the use of both trainees and employees. When mass transit is available, the chances for independence of the handicapped are enhanced and expensive transportation costs are eliminated.

The area of land should be sufficient for the needed greenhouse space plus adjunct facilities such as parking and administration. There also should be room for potential expansion which might include additional greenhouse space, containerized nursery crops, vegetable crops, tree farm, etc. If construction is planned, flat land will reduce the costs of site preparation.

Size, Type, and Structure of Greenhouse

A greenhouse is usually measured by its square foot area. Industry standards estimate that approximately two-thirds of this dimension is actual growing space. The remaining areas are used for walkways and work space. The growing area can be maximized through the design of the work area and the use of multitiered benches and hanging cables, providing requirements for light are met.

Although there are different types of structures that can be utilized, only the quonset house and the ridge and furrow-type house will be presented as examples here. Manufacturers or other professionals should be consulted for alternatives. Each structure may be supported by wood, aluminum, or other material. Fiberglass and polyethelene (commonly called "poly") are the most frequently used coverings. See Figure 12 for cost comparisons.

Quonset House

An arched single span structure, the quonset house usually is constructed in 22-foot to 40-foot widths and may be extended to lengths of several hundred feet. A major disadvantage is the loss of a percentage of growing space at the edges.

Ridge and Furrow House

This greenhouse is a multispan structure connecting two or more arched units through a structural member known as a gutter and usually supported at the ends by vertical walls. It is constructed by connecting 22-foot to 25-foot widths in lengths of 40 feet or more. Among its advantages are maximum use of space, a broad growing area, easy visibility, accessibility, and flexibility; it is most suitable for production growing. Its main disadvantage is that it is less suitable for self-contained units, although walls can be constructed between areas.

Structure

Structure refers to the supports, arches (trusses), and walls or end areas over which fiberglass or occasionally poly is installed.

Aluminum pipe and aluminum trusses provide strong support with minimal maintenance. Wood supports have been used in the past and are still used. Although they may be somewhat less expensive, they require constant maintenance due to their vulnerability to moisture in the greenhouse. Gable ends of the structures are provided by manufacturers, usually in aluminum. However, these are especially expensive and might be constructed on site with local materials at some savings.

Greenhouse Coverings

Glass

Glass is almost never used in contemporary construction due to its expense. If you have a glass house donated, note references to insulation below.

Fiberglass

Semiflexible fiberglass is resistent to damage and abuse and has a 15- to 20-year life expectancy. Its fire resistancy must be determined for fire safety regulations. It conserves less heat in the winter than a double layer of polyethelene.

FIGURE 12

COST COMPARISONS OF ACTUAL POLY AND FIBERGLASS GREENHOUSES

Purchaser	County School	4-Yr. College Horticultural Program	Community College Horticultural Program for Handicapped
Structure	25' x 48' Aluminum, Quonset w/ Gable ends $3191	30' x 60' Aluminum, Quonset w/ Gable ends $4218	30' x 52' Aluminum, Quonset w/ Gable ends $4000
Square Footage	1200	1800	1560
Covering	6 mil poly $490	Fiberglass Fire Snuf w/ tedlar, flame spread & accessories $3298	Fiberglass Fire Snuf w/tedlar, &accessories $3089
Heat System w/Fan Jets	65° at 0° Natural Gas $1132	60° at 0° Steam Unit $1278	50° at 0° Oil Unit $1631
Ventilation: Fans, Air Inlets, Shutters & Housings	Yes $1246	Yes $1507	Yes $1571
Control & Relays	Yes $472	Yes $412	Yes $483
Koolcel	No	No	Yes $1120
TOTAL	$6531	$10,713	$11,894
Per Sq. Ft.	$5.44	$5.95	$7.62

Polyethelene ("Poly")

Poly is installed in double layers 6 mils thick. Its lifespan is only two years, but it is replaceable after initial installation at $.08 per square foot (Summer 1979 figures). Installation is slightly less expensive than fiberglass. Snow load support and fire resistancy must be determined for safety regulations. Poly conserves up to 30 percent more in heating costs compared to fiberglass without additional poly covering. The major problem with poly is less "breathing" than fiberglass because of tighter construction. This reduced air exchange results in less natural ventilation and consequent reduction of carbon dioxide needed for growth and flowering of plants.

Floors, Doors, and Walks

Pea gravel or porous concrete may be used for floor construction. Heavy gravel does not provide a firm footing and should not be used. Walkways should be of poured concrete and of sufficient width to allow use by persons in wheelchairs. Sliding doors should be constructed to facilitate opening and closing by wheelchair-bound participants. Consult OSHA regulations in your area, and be mindful of Section 504 accessibility requirements.

Drainage

Runoff drainage from water inside the greenhouse must be planned as well as drainage around the exterior of the building.

Water

No other single resource is as important as water in the greenhouse. HAVE YOUR WATER SOURCE TESTED BY A WELL-QUALIFIED LABORATORY **BEFORE** BEGINNING A GREENHOUSE PROJECT! After $100,000 in construction, staff build up, and consultation, it is mildly catastrophic to discover after a month's operation that the water is poisoning all the plants. Some universities and local laboratories have adequate testing facilities. One nationally reputable company that specializes in diagnosing water problems is:

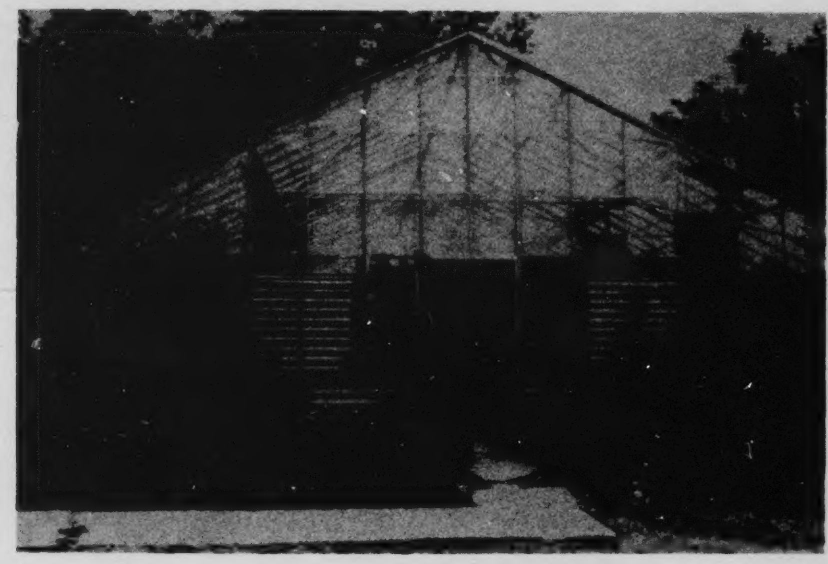
Soil and Plant Laboratory, Inc.
P.O. Box 153
Santa Clara, Ca. 95052
(408) 243-0330

A plentiful supply of water must be assured. A donated greenhouse in the middle of the school yard or at the edge of an estate is not of much value if water cannot be channeled to it. If water temperature is below 55°F, it should be heated before being applied to plants. There are a variety of heating methods including collecting solar-heated water.

Light

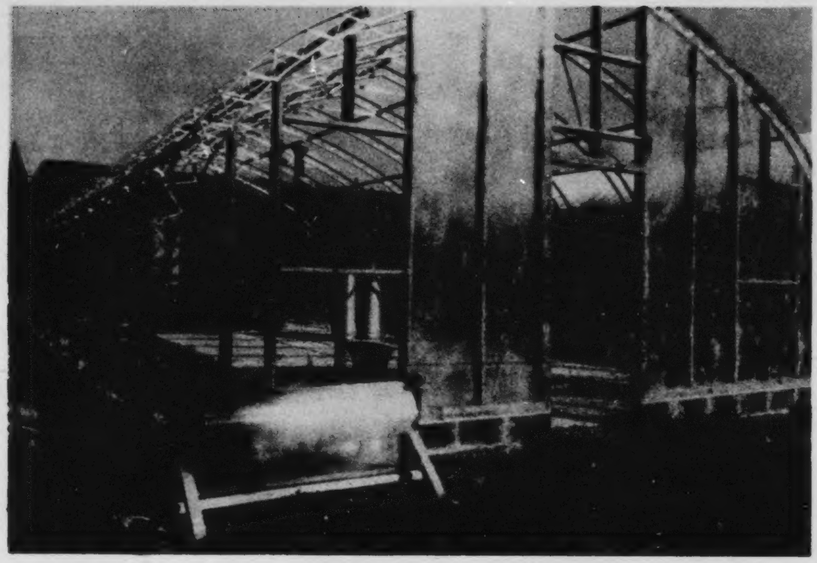
Check with the local extension agent or with neighboring greenhouse

100



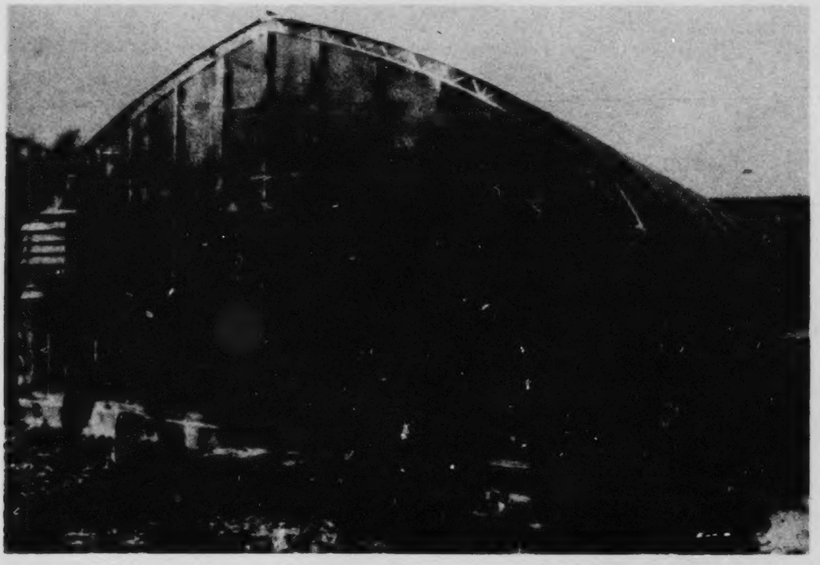
A glass greenhouse

Quonset-type fiberglass greenhouses covered with 6 mil poly for insulation.



A poly greenhouse under construction. Note aluminum arches.

Same greenhouse just completed. End areas are fiberglass over wood framing.



operations about the best axis on which to erect your structure. Watch for nearby shade givers: trees, tall buildings, hillsides. There are advantages and disadvantages in locating the greenhouse adjacent to such impediments to the light. If the greenhouse will be near a school or hospital building which is brightly lit throughout the night, certain crops will be affected. Some plant varieties (poinsettias, pot mums, and others) need a certain number of hours of darkness in order to bloom. In fact, only one foot candle of light will keep some crops from blooming as planned. However, these crops usually call for a considerable investment of funds, time, and expertise and likely would be grown only by a large, experienced program.

Temperature

Temperature control is vital in the greenhouse. Both heating and cooling must be considered.

Heating

Forced heated air is the most common type of heating system used in greenhouses. The air is heated in a boiler or furnace and then forced through plastic tubing with ventilating holes. Fans constantly circulate the air. Systems other than forced air employ hot water and steam. (See Mastalerz, *The Greenhouse Environment* for a more detailed discussion.) Heating equipment is typically rated by manufacturers for holding the interior temperature at 55° or 65°F compared to an outside temperature at 0°F or warmer. Each program will want to purchase equipment suitable for its own climate.

Insulation of glass or fiberglass houses by two layers of 6 mil poly over the exterior of the structure provides savings of 30 percent or more on heating costs—generally far more than the cost of the poly. While some reduction of light and increase of moisture occurs, this can be compensated for.

"Heat sheets" are layers of fabric extended across clear span areas inside the greenhouse. They trap heat under the sheet, and thus only the crop is heated, not the space above. Effective installation (more costly than poly) may save 50 percent or more of normal winter heating costs. One note of caution: the use of heat sheets often prevents melting of snow on the roof with resulting possible damage from the weight of the snow. In such a case, the sheet is drawn back to allow heat to rise to the ceiling.

Cooling

Shading compound may be applied like whitewash to fiberglass and glass coverings for alleviation of summer light and heat which is too intense. This compound should be the easy-off type which is washed off gradually by rain. Cheesecloth and saran cloth are examples of fabric shade materials that may be stretched across the interior or exterior of the greenhouse. Evaporative cooling systems utilize water circulating through fabric pads with fans circulating the cooler air throughout the greenhouse. Large exhaust fans should be installed in each greenhouse for systematic air circulation. They can be controlled automatically by simple, hermetically-sealed thermostats.

Controls

Automatic control systems turn the heating or cooling systems on or off and are available from manufacturers. Units range in price from $300 to $1,000, depending upon sophistication.

Alarms

Alarm systems are available whereby temperature instruments are connected to a phone line to insure that the grower is telephoned automatically in case of heating system failure.

Fuel

Fuel costs will be an exceedingly expensive item. An April 1977 issue of *Grower Talks* addressed this subject.

The cost factor that must be measured, *Grower Talks* reports, is not the per gallon cost of fuel but the dollar per BTU provided. Hence, efficiency of the heating system is crucial as is insulation of the greenhouse. In the 1977 report, six common fuels were compared. Four of them might be considered for the smaller horticultural center. Since the publication of this issue, many prices have increased drastically, and costs vary greatly from one area to another. In the spring of 1980, the respective costs of these fuels on the eastern seaboard are shown in Figure 13.

The availability of the fuel also might be considered. In periods of restricted supplies, greenhouse heating cannot afford to be placed at risk, yet allocations to a given operation are subject to local priorities and hardships. Project planners should investigate this matter before selecting a fuel type. Other concerns include environmental standards that may restrict the burning of soft coal. Gas heaters may be the least expensive to install and maintain but certainly depend upon the availability of the fuel. The costs and option of converting from one fuel type to another also should be investigated when purchasing a new system.

Solar Energy

Solar energy is still considered too costly to be feasible as a primary heating source. Not only are initial costs extremely high but the technology now being developed is likely to become outdated before its mortgage is paid off (*Grower Talks*, April 1977). However, grants from government or private sources may be available for experimental development. Other aspects of solar energy and collecting circulating water heated on the roof structure may be considered. Universities and suppliers' sales representatives should be of assistance in evaluating the pros and cons of active and passive solar energy systems.

FIGURE 13

FUEL EFFICIENCY COMPARISON

FUEL	COST/100,000 BTU	BOILER CONDITION
Propane $1.04/gal.	$1.58 $1.47	Dirty Clean
#2 Oil $1.00/gal.	96.5¢ 85.8¢	Dirty Clean
Gas 35¢/therm	45.4¢ 41.9¢	Dirty Clean
Soft Coal $91/ton	59.7¢ 51.7¢	Dirty Clean

Greenhouse Equipment

Among the fundamental equipment that a greenhouse needs are:

- benches
- sprayers
- plumbing
- water hoses
- pots and baskets
- heating and cooling systems
- protective clothing
- respirators and masks
- electric lights

Culture products include:

- seeds
- soil
- herbicides and fungicides
- cuttings
- fertilizers
- finished off plants
- pesticides

Other equipment that may be optional are:

- automatic controls
- backup generators
- fertilizer injectors
- mist system or foggers
- alarm systems

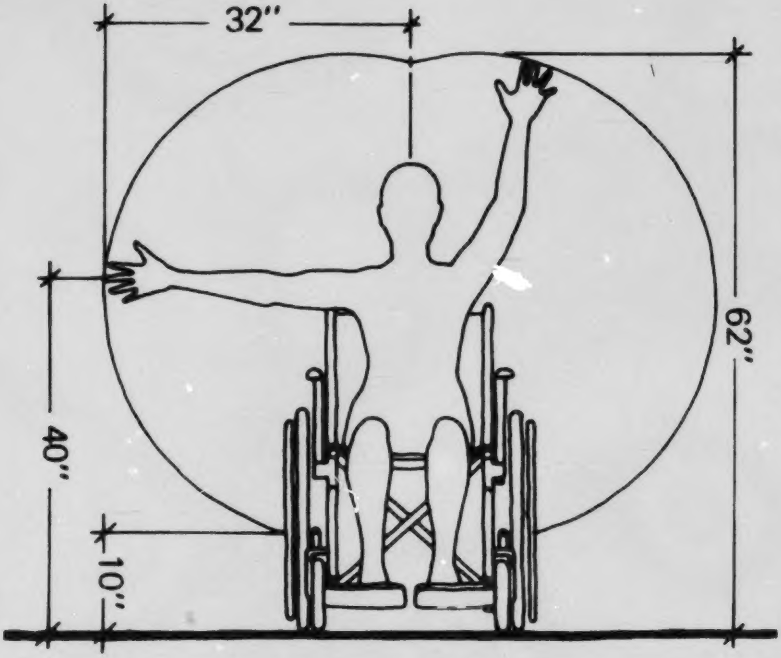
Depending upon the marketing outlets selected, the production center may need an enclosed vehicle, either a van or a modified stepvan to transport quantities of plants to sales.

Greenhouse Layout

A greenhouse used for training handicapped persons or which employs handicapped workers usually needs special attention to be given to layout and design.

A greenhouse should be planned for maximum use of available space with an accessible and efficient traffic flow pattern. This means growing on two-tiered benches and tiers of hanging baskets. However, modifications might have to be made if trainees or workers are physically handicapped.

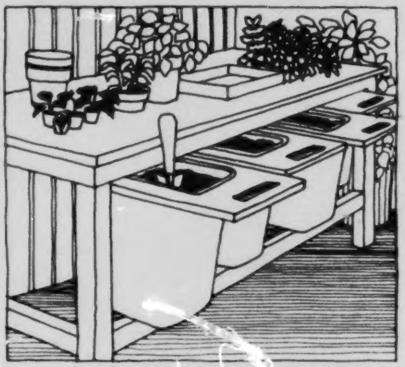
For example, aisles should be at least 3 feet wide to accommodate wheelchairs, walkers, or other mobility aids. Height of benches must be low enough for persons in wheelchairs or high enough for elderly persons who cannot bend or stoop. Aisles should offer a hard surface suitable for persons using canes or wheelchairs or who need especially secure footing. Sliding doors should be installed. For more complete information on horticulture for the physically handicapped, including directions for raised benches and gardens, sliding doors, walkway spacing, especially designed tools, and other useful suggestions, refer to *Easy Path to Gardening* by A. S. White (Readers Digest Association in conjunction with The Disabled Living Foundation, 1972). This excellent resource may be ordered from NCTRH at the cost of $6.50 per copy.



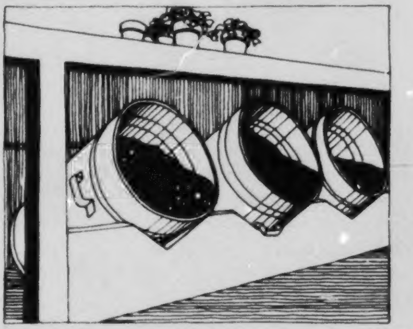
Adult individual functioning in wheelchair:
Unilateral vertical reach - average 60"
Horizontal working reach - average 30.8"
Bilateral horizontal reach - average 64.5"
Diagonal reach on the wall - average 48"
from the floor.

Depending on the size of the greenhouse program and the uses for which greenhouse space is planned, there should be areas designed for potting, rooting, production growing, and storage with efficient traffic flow among the areas. Ideally, there would be a separate potting shed which would not need to be furnished with expensive temperature and humidity control systems. A greenhouse used only for training in basic skills would have a layout providing for increased traffic flow, a wider variety of activities, and perhaps a classroom area.

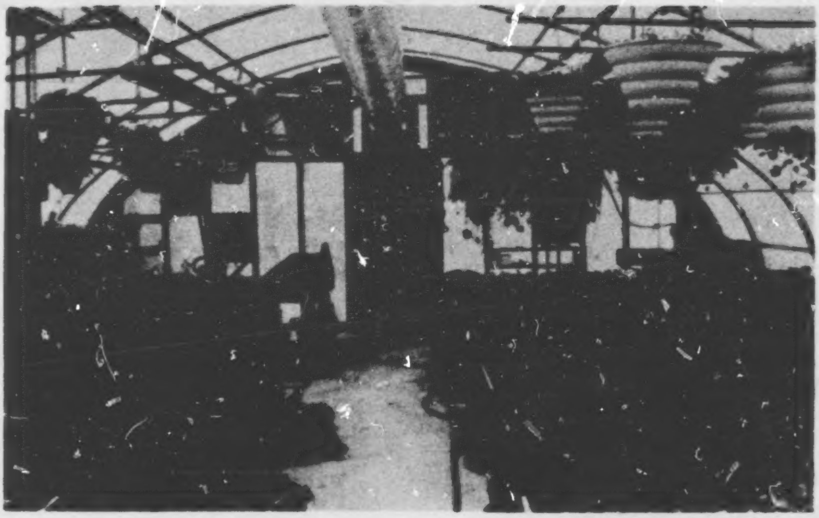
Provision should be made for marketing requirements, also. A shipping area facilitiates the loading and unloading of plants. Large scale production houses should have an indoor truck loading area protected from inclement weather. If direct retail sales are involved, there should be a customer sales area — possibly a separate sales shop which is convenient to prospective customers. See the following chapter on "Greenhouse Sales."



Small scale bulk storage: vermiculite, peat moss, and so on, can be stored in small plastic garbage cans set beneath the table in easily accessible sliding panels.

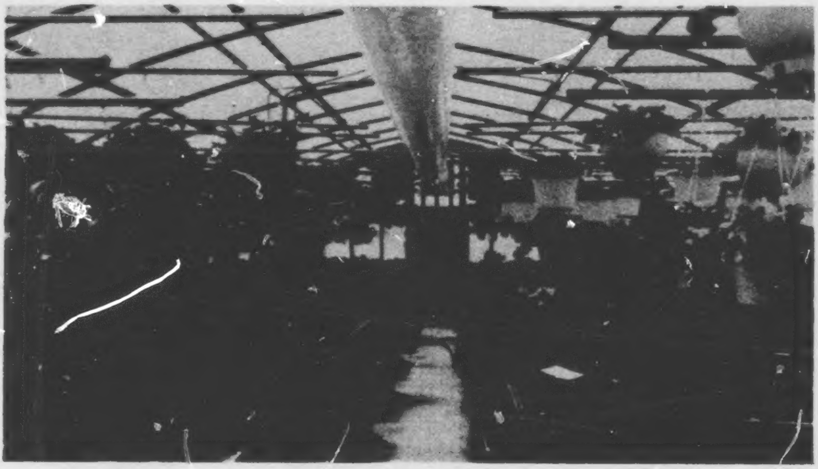


For larger quantities standard galvanized cans can be angled or hinged under a bench.



The greenhouse in the upper photograph is used for training in basic greenhouse skills. Note the potting bench, wide aisles, benches filled with small plants and cuttings being rooted.

The lower photograph shows a production greenhouse in which plants grow to the size and configuration desired for top quality products. Note plants being grown on two levels on benches and two levels of hanging baskets. Benches are constructed of wood frames covered with heavy wire mesh. Tray on empty bench is a "flat."



NOTES

110

Chapter Eighteen

GREENHOUSE SALES

It is the conviction of the Manual that the generation of greenhouse sales is a vital part of creating the real work environment in which training takes place. Even more so, sales are an integral and necessary part of the work co-op operation. The experience of several centers serving the handicapped documents both a rehabilitative and a financial value in including this component. Although this area of activity does not usually lend itself easily to a broad involvement of a large number of trainees, for those few who can work or train in the sales area it provides an opportunity for social skill development and community participation. Financially, self-earned income contributes to the operation of a training program, pays wages to trainees and workers, and helps to alleviate some of the expenses of a training or co-op program.

The purpose of this chapter is to provide a general knowledge of sales issues and to explain several options or "sales models" in marketing strategies. The Manual does not intend to explain the details of market analysis nor the accounting and business procedures of retail or wholesale operations for which numerous texts and professional experts can be utilized. What is stressed here are the implications in each model and the importance of the center's developing a sales plan. The training program as well as the work co-op can profit from and must have a well-thought-out sales plan.

In the course of explaining several sales models, the Manual will address their differences in financial return, the requisites of the size of operation or techniques involved, and the implications for financial stability and for training purposes. Other general issues are included, such as pricing, inventory, shipping, and advertising.

Developing a Sales Plan

A thorough sales plan begins with a market analysis revealing which products are most likely to sell and through what means sales most likely can be achieved in the target area. When beginning a horticultural program, the project planners must not think in terms of the first and easiest sales opportunity but rather must look towards a five-year period of developing a sales market. They must acknowledge present and potential competition and examine a variety of sales approaches that might be suitable to the nature of their greenhouse operation and to their locale. The decisions about the type of greenhouse products and the selection of crops, e.g. green plants, open field or containerized nursery, etc., must be grounded in this assessment early in the program's founding.

Because of the complexities involved in marketing, it is strongly recommended that the developing horticultural center contract with a professional consultant for such a market survey. The consultant notes existing operations in both retail and wholesale markets, inspects the economic forecast in the community, anticipates expansion, and evaluates the real limits for expansion. Sources for locating consultants are listed in Chapter 23.

A further consideration in a market analysis will be the relative value in pursuing a retail or a wholesale approach or some mixture of the two. Each has advantages and disadvantages for which the size and rehabilitative nature of the horticultural program must be taken into account. What is not so clear is that it can be difficult for a program to be involved in both areas at the same time, although it can be done successfully. With professional recommendations, a center can streamline its business operations and eliminate the confusion over procedures and pricing practices.

Of central importance to the marketing consultant is the location of the greenhouse, for a prime location is essential for a successful retail shop. The location also affects setting up community sales and wholesale routes since delivery means fuel, time, and a limited radius of service. Some professional opinion holds that it is not advisable to conduct a retail business directly out of the production greenhouse since frequent walk-through traffic would disturb the work setting and inventory and quality control would be more difficult. If a site has not been selected, contact with a marketing specialist prior to the decision would be highly advantageous.

It is important that the sales specialist and the grower work together in developing the sales plan in order to coordinate propagation and sales projections. Projections should be made for the number of units grown, peak sales periods, and crop selection. Often these projections start with simply setting targets for the following week or month. Despite well-laid plans which sometimes go astray, 12-month projections should be attempted so the grower can make advance preparations for space and labor and the sales specialist can make advance contacts for purchases and advertising. Eventually, planning can be refined to enable the determining of gross and net dollar income of certain crops.

Sales Models

The following sales models may or may not be feasible for your training program or work co-op operation. Many unique and local factors operate to the advantage or disadvantage of each model, and these demand close inspection in your own situation.

Retail Plant Shop

The retail plant shop is usually adjacent to the horticultural training center but can be set up in an urban store or shopping mall outlet. Its products are green plants, including tropicals and seasonal varieties. Some retail plant shops may offer cut flowers but these are usually the province of the florist. In addition to plants, the retail shop can offer outdoor nursery stock plus related

A retail plant shop

products such as ceramic pots, plant nutrients, and macrame crafts. The over-the-counter individual sale is the usual form of income and depends heavily upon customer traffic.

In the retail shop operation, the saying goes that there are three rules for making a profit: "1. Location, 2. Location, and 3. Location!" The location of the retail store is of prime importance if sales are expected to be high and profitable. Professional marketing specialists have narrowed down a "best location" to certain street corners, shopping patterns, or times of the day that result in optimum sales. Without a choice location, the retail outlet is unlikely to prove fruitful for a large volume of sales. Ample convenient parking must be available, and there should be room for further expansion, especially if plant sales would potentially be expanded to include shrubs and trees.

Of utmost importance is visibility of the sales area from the street or road. The greater the volume of sale material seen by passing potential customers, the greater the sales volume will be. Attractive landscaping, outdoor flower displays, etc., are equally important and increase training and sales quality and quantity. An attractive indoor display is necessary in a retail outlet and requires display counters, floor space, and hanging area. Each of these adds some cost to the operation.

Some of the advantages in operating the retail plant shop are:

- Expected high return. Markup ranges from 50 percent to 300 percent of wholesale cost.
- Immediate cash return.
- Good opportunity for training in socialization skills.

Some disadvantages are:

- Very high costs associated with:

  prime location.

  labor due to long hours of operation (required early evening hours and weekends for maximum traffic).

  inventory and advertising.
- Relatively few trainees can be offered training in this setting.

The Small Business Administration has published a booklet entitled *Starting and Managing a Retail Flower Shop* that may be of some assistance despite its orientation to the cut flower business. The booklet may be ordered from:

Superintendent of Documents
U. S. Government Printing Office
Washington, D.C. 20402
Cost: $1.20

Retail Building Sales

The retail building sales model is an extension of the retail shop transported into the business community. An attractive portable sales display is set up in a building which has a high volume of pedestrian traffic, and sales are made to individual customers. This sales strategy targets as many buildings as possible that have 1,000 or more employees or that have an equivalently high volume of persons passing through. Large corporate offices or utility company offices are examples. Government offices, if not large in themselves, often draw large numbers of people. Building sales at each location can be held two or three times each year, especially at holiday times (Christmas, Easter, Valentine's Day, Mother's Day).

Contact is often made with an employee association representative or recreation department head who may cosponsor the sale on behalf of their employee organization. If the organization cosponsors such a sale, a commission of 5 to 15 percent of gross sales is arranged and a date is established. Clearance may have to be obtained from the building superintendent, and this may be done by either the organization representative or the sales specialist. Local sales tax and license requirements also must be met.

Advance advertising can mean the success or failure of a building sale. One relatively inexpensive means of advertising is single sheet fliers distributed throughout the building two to four days prior to the sale. A sample flier can be seen in Figure 14.

FIGURE 14

MELWOOD HORTICULTURAL TRAINING CENTER

SPONSORED BY:DFBRA
LOCATION:300 Indiana Avenue
DATE: April 15th & 16th
TIME: 11:00 A.M. - 2:00 P.M.

3" Pots - $1.00 plus tax

Artillery Fern
Asparagus Fern
Begonias
Peperomias
Swedish Ivy
Succulents
Tri Color Jew

4" Pots-$1.50 plus tax

Artillery Fern
Bolivian Jew
Jades
Peperomias
Piggy Backs
Spiders
Swedish Ivy
Tri Color Jew

6" Pots-$5.00 up+ tax

Assorted Tropicals

10" Pots-$15.00 up+ tax

Assorted Tropicals

5 1/2" Hanging Baskets $4.00 + tax

Artillery Fern
Asparagus Fern
Bolivian Jew
Hanging Jew
Peperomias Scandens
Piggy Back
Pixie Jew
Spiders
Swedish Ivy

8" Hanging Baskets $7.00 + tax

Asparagus Fern
Bolivian Jew
Piggy Back
Pixie Jew
Pothos
Philodendron
Swedish Iny
Spiders
Tri Color Jew

MELWOOD HORTICULTURAL TRAINING CENTER, INC.
5606 Dover House Road
Upper Marlboro, MD. 20870

Melwood is a vocational training center for mentally handicapped young adults. Horticulture is the medium we use to help people become independent and productive citizens.

A trainee gains valuable experience while waiting on customers at a retail building sale in the lobby of a large utility company.

The sales area in each building should be attractively arranged and plants should be clearly identified and priced. Each plant sold should have a tag giving the cultural requirements and, of course, the name of the program. Twenty to 30 percent more plants than the projected sales goal should be available, since a wide variety of types and sizes of plants from which customers can choose will result in a higher sales volume. One method of estimating sales volume is based on the projection that 10 percent of potential customers will each buy $5.00 worth of plants. In a building with 5,000 employees, $600 to $700 worth of plants should be taken to the sale. Of course, all plants should be of the highest quality. A good display of first quality plants will insure repeat customers at subsequent sales and will leave a good impression of the horticultural center and its program. A portable sign or display identifying the center should be prominently positioned at every sale.

The advantages of retail building sales are similar to those in the retail shop: high gross return, immediate cash income, high visibility, and training opportunities.

Some unique disadvantages are:

- Additional commissions of 5 to 15 percent to be paid.
- Travel and transportation expenses.
- Long hours and hard work. Although weekends are not involved, sales personnel may conduct sales through the closing hours of the business day, and loading and unloading the truck and setting up the display can be difficult and physically strenuous.

Other Retail Sales Markets

Sales booths may be set up at county fairs, flower shows, and other special events which offer sales opportunities. However, the public relations value often is greater than the prospect of sales. Display sales booths should be well designed with all plant materials of the highest quality. Informational handouts should be available to inform all customers of the mission and goals of the horticultural program. Even if duplicated in-house, these handouts should be of professional quality. Volunteers are a good source of sales personnel for these special sales. Although actual training experience may be limited, special events are excellent opportunities for community interaction.

Wholesale

Wholesale operations consist of selling bulk quantities of plants to one or more buyers at a time. Among the common wholesale customers are small retail plant shops, florists, garden centers, chain stores, and variety and hardware stores. The parks, recreation, and natural resources departments at city, county, state, and federal levels also place wholesale orders.

The wholesale market is no less competitive than the retail market in both quality and pricing. It is absolutely critical to maintain quality from propagation to the selling date since poor plant quality is sufficient reason for a wholesale customer to cancel an entire order on short notice. At the same time, preservation of quality helps to ensure repeat customer purchases.

Wholesale operations may include different methods. The *wholesale route* consists of the greenhouse salesperson driving a customer route with a truck filled with a variety of plants, offering wholesale volume at a wholesale price of the day and making regular calls on potential customers. The customer then may choose to purchase exactly what he sees and in the amount suitable for use.

The *wholesale order* is an order placed months, weeks, or perhaps only a day in advance. Wholesale orders are developed through becoming known in the community and offering competitive prices and reliable quality.

A greenhouse dealing in the wholesale market must have a production plan in operation to ensure meeting delivery dates and quality while at the same time not depleting its entire stock. An operation also may buy certain crops at reduced wholesale cost for finishing off. These are then used to complement the stock of the greenhouse or to provide "leaders" for the sales. The leader is any variety which is highly desirable to the customer but entails less profit margin for the seller. The leader is offered with other more profitable stock in a package deal, enabling the greenhouse to get its own products into the market and establish sales outlets.

One advantage to wholesale operations is that they provide an outlet for large volume production. If the greenhouse is specializing in only a few varieties, this may be the marketing strategy that is most suitable. A principal disadvantage in the wholesale market is that sales are often on a credit basis and may result in cash flow problems or unpaid accounts. The horticultural rehabilitation center should not avoid determing the credit rating of its customers, particularly the small private plant shop. In a tight, volatile economy, these small businesses come and go almost daily. A note of caution must be sounded when a center begins to rely upon only a few large wholesale customers. Whereas large, consistent buyers may provide predictable income, if one or two such customers are lost, the greenhouse may have the predicament of a large supply of plants without an outlet for them. If these varieties are seasonal in nature (e.g., poinsettias, mums already in bloom), the market value may be lost. Hence, it is advisable for the training program or work co-op entering the wholesale market to consider developing small repeat customers rather than, or in addition to, a few large ones.

Contract Growing

This market technique is an extension of the wholesale process and involves a prior contract between the greenhouse and a contracting agent for a select product to be delivered at a determined date. This sale may be considerably larger than the ordinary wholesale purchase but may also apply to the local store arrangement. The difference is in having a written contract which specifies the variety, quantity, and price. In addition, there are usually one or two inspections of the crop. The first inspection is made approximately a month before delivery, at which time, if the crop is accepted, a percentage of the purchase price is deposited. The second inspection is made on the day of the sale or the day before. Some contracts specify that if the plants are not accepted, the greenhouse may be liable for any difference that the purchaser may have to pay for a replacement crop. Parks departments, garden centers, or large chain stores may be interested in contracting such sales.

Disadvantages of this sales procedure are:

- The contingency for the purchaser to reject the product.
- The high risk associated with a single crop's failure.
- A lower margin of profit.
- Delivery must be made in bulk, perhaps requiring several vehicles or several trips to the purchaser, and delivery schedules may be very tight to meet the purchaser's sales date or to meet propagation criteria (e.g., blooming poinsettias for Christmas).
- Contracts may involve a bidding procedure before the contract is awarded, and bids made in advance may not foresee later costs incurred. The bidding procedure often includes the posting of a bid bond of perhaps 10 percent of

the contract price. If the contract is won, the center then may have to post a performance bond of up to 50 percent. Posting such bonds requires an available pool of ready cash or an excellent credit rating to obtain bond funds.

Some advantages to contract growing are that the purchaser is usually solvent and not likely to be a bad account. The contract crop is presold and so sales expenses are quite reduced. Additionally, a contract crop may consist of only one variety and thus provide an easy growing procedure for the grower.

Broker

Sales to a broker are made when a greenhouse operation has high volume production. Frequently, only a single crop is propagated and it must be very large. The greenhouse must have its material ready for sale and must have a high volume shipping capability that includes boxing and protection of the product in transit. There is a relatively small margin of profit in brokering. If the training center has a large volume production, it may find it suitable to sell either this quantity or only its surplus through a broker.

Pricing

Methods of pricing plants range from the very simple to the very complex. At one end of the spectrum is the sales person who walks down the street and notes what the competitor is charging and sets a price accordingly. On the other end of the spectrum are somewhat sophisticated cost accounting methods that involve precise prorated costs for heating, labor, and selling expenses for each crop and for each unit sold. Because of added costs associated with training and less efficient labor, the training greenhouse and probably the co-op greenhouse will not adequately recover all costs involved in the propagation and selling of their products. Still, a program must know the actual costs of producing a product if it is to price its material for sale intelligently and know what level of subsidy is needed. See Figure 15 for a method of establishing product costs and pricing.

Income

Greenhouse managers must have a clear picture of income based upon crop, units sold, outlet, and date of sale. This information enables the manager to identify the sources of gross income by product, market, and season, and is valuable both for pricing and for subsequent planning.

Expenses

Expenses can be broken down into fixed, variable, and semifixed expenses. These expenses can be comparably outlined for the training and work co-op programs and used to compute prices.

FIGURE 15

METHOD FOR ESTABLISHING PRODUCT COSTS AND PRICING[1]

$$\frac{\text{Monthly Space occupied (inventory by sq. ft. of bench space)} \times \begin{matrix}\text{Average Monthly Indirect Cost (overhead per sq. ft. of bench)} \\ + \\ \text{Depreciation per sq. ft. of bench}\end{matrix} \times \text{Number of months grown} + \text{All Direct Cost (Materials, Seeds, Bulbs, Plants \& Direct labor)}}{\text{divided by Number of Units Producted per Crop}} = \text{Unit Cost}$$

Grimmer[1] summarizes the relationship of each cost to total costs in a circular diagram (Figure 16). These estimates were taken from growers in Wisconsin prior to publication of his book in 1975 and alterations should be expected. Grimmer indicates that labor costs may range as high as 50 percent in some facilities. Certainly heating and fuel costs and transportation costs have risen dramatically in the late seventies. Grimmer provides two methods of establishing profit depending upon the level of sophistication in record-keeping. The simple method (Figure 15) involved these steps:

1. Determine monthly space occupied by each crop.
2. Determine average monthly indirect cost or overhead per square foot of bench space.
3. Determine depreciation per square foot of bench space.
4. Determine number of months grown for each crop.
5. Determine direct costs (materials, seeds, bulbs, plants, and direct labor).
6. Determine number of units for each crop.

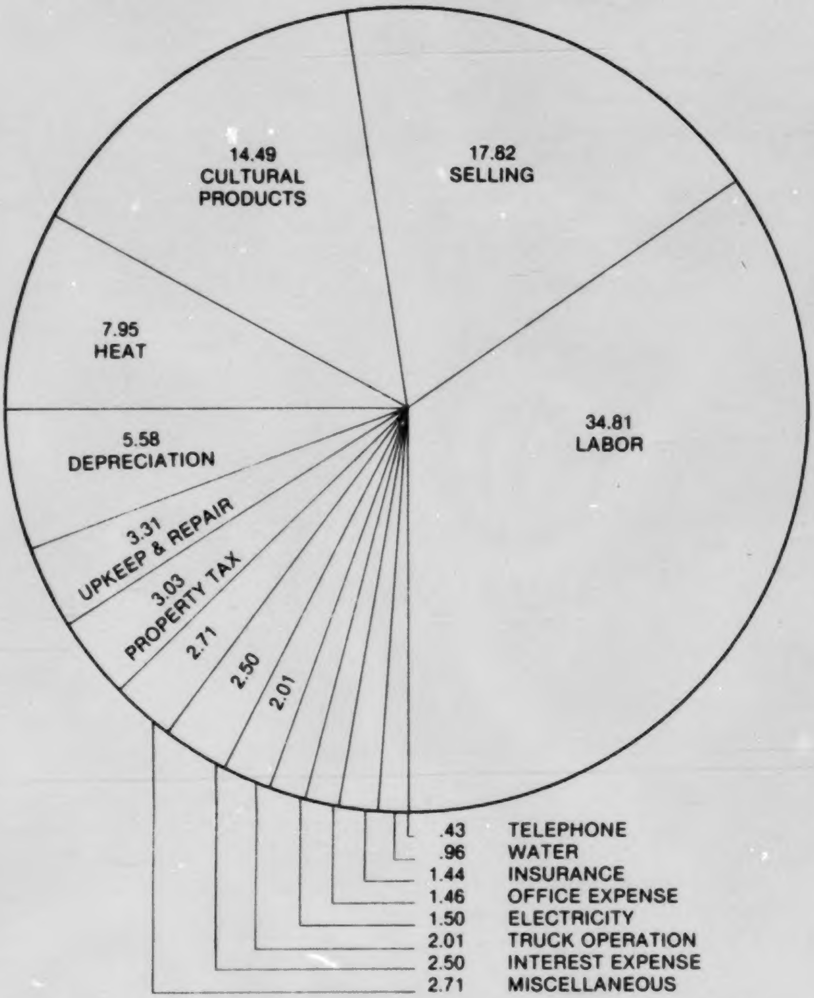
To get to the point of being able to use Grimmer's formula, the greenhouse management must be able to keep track of labor expended on

---

[1] W. W. Grimmer, *Greenhouse Cost Accounting*, Gateway Technical Institute, Kenosha, Wisconsin, 1975.

FIGURE 16

COMMERCIAL GREENHOUSE COSTS AVERAGE



RELATIONSHIP OF EACH COST TO THE TOTAL OF ALL COSTS each crop, bench space occupied by each crop on a monthly basis, and the overhead costs involved in the greenhouse operation. Each of these components can be recorded on appropriate ledgers or record sheets and accounted for during the propagation season.

Retail Versus Wholesale Prices

In general, retail costs may range from 50 to 300 percent over the cost of wholesale prices.

Some other differences in retail and wholesale prices:

- Advertising in retail is approximately 7 percent of total sales, whereas in wholesale it should not exceed 5 percent of wholesale income.
- Bad debt expense occurs more frequently when credit sales are made to large numbers of accounts, especially small plant shops.
- In addition to advertising costs, retail sales costs differ with specific rents, fixtures that include display units, counters, cash registers, and greater labor costs.

Industry sources, such as Ball Seed Company (See Appendix) and others, can provide an updated estimate of industry cost averages per square foot of growing space. These professional sources should be drawn upon during the course of planning and managing the greenhouse operation.

Inventory

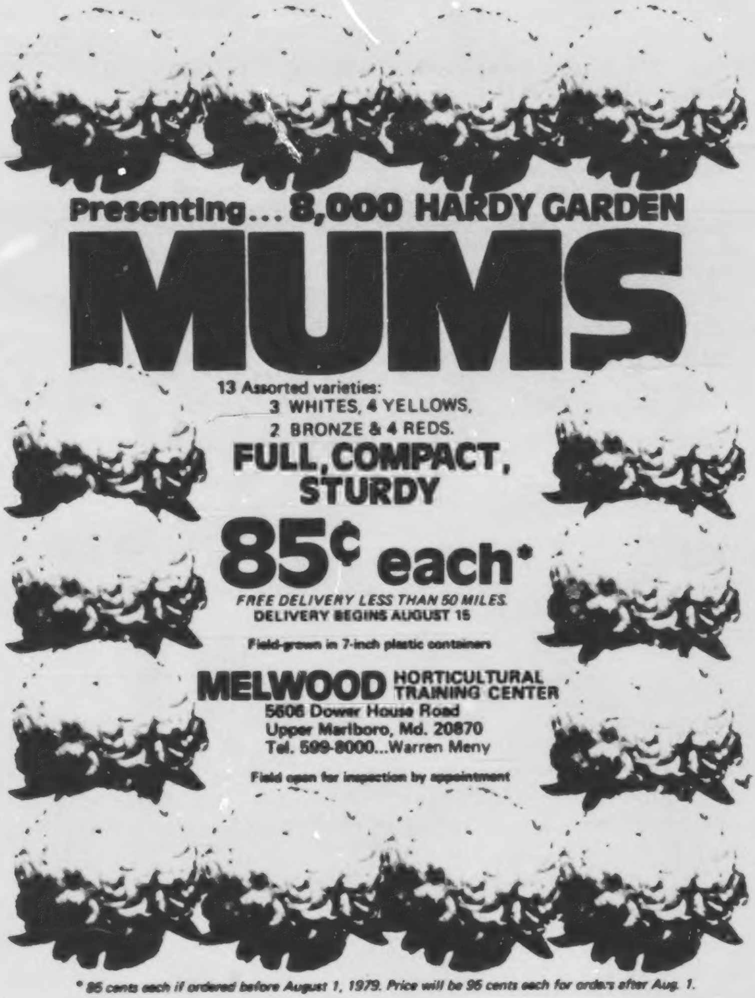
The greenhouse operation that emphasizes retail sales must keep a wide selection of plants in stock. In addition, it will rely upon seasonal sales of special varieties and must have a ready source for these plants or flowers. In wholesale marketing, a specialization of crops is advantageous and a grower should emphasize those varieties with which he or she has experience. Wholesale operations have been conducted with one crop or with a wide variety as long as large quantities can be produced.

An inventory management system must be coordinated between the sales and production departments. An inventory process should keep an accounting of how many units are taken out to a sale or on a delivery route and how many are brought back. Losses because of crop damage or quality also should be recorded. Greenhouse inventories should turn over at least three times per year. Records of high inventories should be taken as indicators for the need to create new outlets, to change varieties, or to improve quality.

Advertising

Industry averages show that retailing requires that about 7 percent of sales income be devoted to media advertising (newspaper ads, radio or TV spots, direct mail campaigns). In building sales, one center has found that 2 percent of sales income is devoted to in-house mail distribution and pasteup posters. Wholesale advertising requires an average of 5 percent of sales income be devoted to trade publications and direct mail services. Figure 17

FIGURE 17



Presenting... 8,000 HARDY GARDEN

MUMS

13 Assorted varieties:
3 WHITES, 4 YELLOWS,
2 BRONZE & 4 REDS.

FULL, COMPACT, STURDY

85¢ each*

FREE DELIVERY LESS THAN 50 MILES.
DELIVERY BEGINS AUGUST 15

Field-grown in 7-inch plastic containers

MELWOOD HORTICULTURAL TRAINING CENTER
5606 Dower House Road
Upper Marlboro, Md. 20870
Tel. 599-8000...Warren Meny

Field open for inspection by appointment

** 85 cents each if ordered before August 1, 1979. Price will be 95 cents each for orders after Aug. 1.*

shows a sample wholesale advertisement mailed to prospective wholesale customers.

Public Relations

There is a public relations value to marketing and sales which comes from community exposure. Especially at building sales and special community event sales, public recognition of the program fosters knowledge and awareness. Some sales locations, such as the county courthouse, may produce only a modest level of income but will generate a high level of goodwill, understanding, and general community support for training and employment for handicapped persons.

Staffing

For a wholesale component of significant size (above $50,000), the greenhouse usually must have a full-time sales specialist. A retail outlet will require a separate manager and sales clerk(s). Sales personnel should be knowledgeable about plants and have basic sales skills and drive. The addition of part-time or full-time delivery persons is based upon the volume of sales and the number of deliveries. A center that is just starting in a horticultural program would best focus its energies in one direction in sales as well as in production. Diversity can be added gradually according to development plans.

Vehicles

The common vehicle used in horticultural sales is a large van or stepvan. These must be modified with shelving for flexibility in hauling the varieties of plants and pot sizes to be accommodated. A vehicle can be leased as well as purchased.

Insurance and Licenses

The center must look into additional liabilities involved in its respective sales operation. These include fire, theft, and common liability for injury or damage. Licenses must be obtained for each of the jurisdictions where sales are conducted.

Interior of a delivery truck with shelving constructed especially for transporting different sizes of plants and pots.

Grounds maintenance/management skills involve more than cutting grass.

Chapter Nineteen

DEFINING GROUNDS MAINTENANCE/MANAGEMENT PROGRAMS

In recent years, rapidly increasing interest has focused on grounds maintenance as a means of providing training and co-op employment for handicapped and disabled individuals. These services have proved their value and practicality in the work co-op and as an opportunity for competitive job placements in the community.

Grounds maintenance, and its more encompassing term grounds management, involves more than just grass cutting. Grounds management refers to the total planned care of plants and soil and includes the total spectrum of horticulture. Grounds maintenance and landscaping are elements of grounds management. Landscaping is the artistic horticultural design and implementation of that design, while grounds maintenance is the maintaining and nurturing of the original landscape design creation and can include edging, fertilizing, pest control, caring for trees and shrubs, etc. Some tasks not usually thought of as grounds maintenance entail trash pickup, filling potholes, clearing bike paths, and general land clearance.

Grounds management/maintenance services may be contracted with industrial, commercial, and public properties, local homeowners, apartment complexes, and home builders. In some cases, indoor maintenance may be included so that the primary horticultural tasks are supplemented with janitorial or custodial services in the buildings on the site where grounds maintenance is being performed. These indoor aspects of contracts might be wintertime provisions of 12-month contracts and a real benefit during winter down time.

Goals

As indicated in the section on greenhouse programming, three elements take prominence in determining the goals for setting up a program in grounds management/maintenance.

1. The purposes you want to accomplish in your program.
2. The persons to be served and their ages, capabilities and skills.
3. Expected self-earned income.

Purposes

As outlined for greenhouse programs, grounds maintenance training can be applied in prevocational, vocational and work co-op programs.

Prevocational training builds up personal, social, and work adjustment foundation level behaviors that are considered prerequisites for vocational training. The focus is on how the trainee develops self-esteem, good personal attitudes, and communication; how the trainee interacts with co-workers; and how the trainee fits into the work environment, is motivated, punctual, responsive to supervision, etc. Productivity is emphasized.

The outcome of prevocational training are persons who have developed proper personal and social behaviors and a basic understanding of and adjustment to the work environment, thereby qualifying for entrance into a vocational training program. These prevocational individuals generally are responsible for themselves, function effectively in a group work setting with co-workers, and have demonstrated basic understanding of and participation in the work environment.

Vocational training provides training in specific grounds maintenance skills and the identification and use of specialized tools and equipment, sharpens the personal and work adjustment behaviors, and develops a baseline of work skills and attitudes which can result in a variety of employment opportunities.

The outcome of vocational training is a person who has acquired specific skills in grounds maintenance work and the general work habits of a good employee, and who is prepared to accept co-op work or competitive employment in grounds maintenance or in another appropriate job.

Work co-op employment is employment of handicapped persons at 50 percent or more of the prevailing wage and without inclusion of prevocational or vocational training components. Supplementing the co-op work force with a limited number of nonhandicapped workers is an option to use to attain more technical or involved contracts which result in higher dollar returns for the co-op workers. A decided advantage of a grounds maintenance co-op program is that expansion of the number of persons served is not limited by the size of the physical facilities (as opposed to a greenhouse program in which the number of persons it can serve is limited by the square footage size of the greenhouse). The greater the number of community-based grounds maintenance contracts, the greater the number served with only the addition of necessary equipment and transportation.

A significant disadvantage of grounds maintenance work is its seasonal nature with the problem of locating appropriate work during winter down time. One answer to this problem is the development of 12-month grounds maintenance contracts which is addressed under the chapter on contract procedures. Other options include indoor custodial and winter outdoor work such as snow removal.

Developmental Program Design

Developmental program design is a way of utilizing the prevocational and vocational training programs to reinforce each other. The following prevocational and vocational models have separate designs, and it is possible to implement them as two separate programs. However, in grounds maintenance as well as in greenhouse training, prevocational and vocational training are organized and conducted as one continuing development rather than as two separate programs.

It has been found generally advantageous to teach a trainee the behaviors that are fundamental for employment (the prevocational curriculum) while that trainee deals with less sophisticated equipment. As the trainee demonstrates mastery over these work behaviors, the training emphasis shifts to vocational skills, including use of power equipment and working efficiently and independently.

Persons and Disabilities to be Served

There are both general and specific abilities demanded of grounds maintenance workers, and a thorough understanding of these abilities is imperative if one is to plan a successful grounds maintenance program. The population served may be one of a specific handicap or level of capability or a combination of handicaps and capabilities. Selection of workers depends on balancing the needs of the workers with the demands of the selected contracts to be performed.

General abilities or predispositions in grounds maintenance work are:

- adaptability to outdoor work and to inclement weather (heat, cold, and rain)
- endurance for long hours in peak periods of work
- working in unstructured and unconfined environments
- emotional stability as pertains to equipment safety requirements
- nonsusceptibility to pollen and insect bite allergies

Specific abilities or the potential for developing these abilities are brought into play in handling power equipment and in properly responding to safety demands. These include:

- strength and balance
- gross and fine motor coordination
- simple and complex judgment
- visual perception
- memory

When determining who will enter grounds maintenance prevocational training, the critical variable is the individual's ability to cope with minimal supervision. For example, if a person has a history of wandering off from a location or demonstrates an exceptionally limited work attentiveness span (less than 15 minutes), he or she would be considered an unlikely candidate. Such persons can develop longer attention spans and eventually move into grounds maintenance work through other, more controlled work environments. The problem for an instructor directing five trainees on a four-acre site illustrates the point.

Grounds maintenance workers, and consequently trainees, traditionally have been male. This historical stereotyping has resulted from the demands of working outdoors with heavy machinery. As employment customs change, training and placement of female grounds workers and trainees also are occurring, provided that the general and specific abilities are present or can be developed.

The general rule of thumb for how many individuals can be served in any one of the grounds maintenance programs (prevocational, vocational, co-op) is that all three areas utilize five to six trainees or workers per instructor or crew foreman. This ratio is due to the supervision required for safety, training, and production in an unstructured environment. (And, most crew cab trucks carry only six passengers — workers should *never* be transported in open truck beds or bodies.)

The number of crews is limited by the equipment that is available, the contracts to be performed, and suitable leaders for each crew. As in the sections on greenhouse programs, grounds maintenance operations are described in terms of crew units with the assumption that crew units can be duplicated with minor alterations.

Tools, Equipment, and Vehicles

The choice of tools and equipment appropriate for use by a particular crew will depend on the abilities of crew members and the work to be accomplished. A list of standard tools and equipment and a description of suitable vehicles used by grounds maintenance crews is given in Chapter 22, "Grounds Maintenance Work Co-op." Regardless of the functioning level of the trainees or workers, proper maintenance and safety guidelines should always be followed.

Safety

Safety around tools and power equipment is a requisite second to none. Safety guidelines should be drawn up by instructors and supervisors before beginning a training or co-op program. Moreover, a total safety attitude must be developed in which all staff are constantly aware of the safety guidelines. An instructor or foreman must be clear with crew members about precautions to be taken when handling gasoline, sharp blades, pointed tools, and power equipment. A safety-centered attitude should be nurtured and reinforced in periodic staff in-service training.

Some safety guidelines are:

- Absolutely no smoking around or near equipment and fuel.
- Hands must be kept away from moving blades.

- Instructions must be clear in regard to starting and stopping equipment.
- Sharp pointed tools are to be handled with safety locks or protective sheaths when not in use.
- When transporting power equipment and during storage, disconnect the spark plug connector wire.
- Be aware of special conditions, e.g., water, impediments in terrain.
- Steel-toed shoes are required.
- Power equipment should not be operated too close to another crew member or a passing pedestrian.

Highway safety rules must be enforced during trash pickup and lawn mowing jobs in proximity to traffic. Some safety rules are:

- Face oncoming traffic when mowing or picking up trash adjacent to traffic.
- Reflector vests are to be worn by persons close to highway lanes.
- Power equipment should not be engaged when crossing a highway lane.
- Use "Caution: Crew at Work" signs.

Evaluation and Quality Control

In the two grounds maintenance training program models, evaluation refers to evaluating trainee behaviors and the effectiveness of teaching methods. However, there also should be an evaluation system to be used to judge the quality of contract work performance and safety at the work site. Such a system would call for monthly, quarterly, and annual evaluations being made by both the training or work program and also by a representative of the facility for whom the grounds work was performed. Refer to Chapter 16 on greenhouse quality control, as the importance of quality and the basic principles are the same.

Self-Earned Income Expected

Budget examples on the financial income and expenses expected from these programs will be provided in a later section. Here we shall address the role of self-earned income in programming.

Prevocational training crews are expected to earn from 20 to 30 percent of their total program expenses. Thus 70 to 80 percent must come from other sources such as training monies. Reduced efficiency must be supplemented by additional labor, as when two crews are put to work completing what a more competent single crew would complete in equivalent time.

Vocational training crews are expected to be more productive than prevocational crews. A range of 40 to 60 percent efficiency (earned income to total costs) should be expected with higher or lower variations possible.

Work co-op programs in grounds maintenance can reasonably expect 75 to 90 percent of their expenses and wages to be covered through contract monies, with the following two reservations:

1. Winter down time work must be found for employees under limited seasonal contracts. Classroom training, reduced number of work hours, and even layoffs of unneeded personnel are options which relate to the real working situation.
2. The co-op program must not be diffused with prevocational and vocational training elements, unless this mixing is done very carefully to avoid possible disadvantages described in the following section, Mixing Program Goals.

Mixing Program Goals

Program goals can be "mixed" in any of several ways.

1. Prevocational, vocational, and work co-op crews can be directed out of the same administrative services although they perform entirely separate contracts or separate aspects of the same contract.
2. Individuals who need both prevocational and vocational training might receive both kinds of training from the same instructor. In some respects it is impossible to do otherwise and programmatic distinctions are artificial. (An appropriate manner of implementing this training is through developmental programming.)
3. An operation which acquires several contracts, each specifying different levels of work crews, may for various reasons (vehicles, programming, equipment, weather constraints, etc.) put both training and work co-op crews on the same jobs.

There are prohibitions to number three above and advantages and disadvantages to be mentioned about numbers one and two. Contracts arranged under training or work co-op terms are violated when the center employs workers or pays wages at other than specified terms. For example, training level crews are not to complete work co-op contracts, especially when performing the work at wages lower than called for in the contract. It is financially unwise and equally incorrect, although perhaps not as legally problematic, for work co-op crews to assist in the performance of training crew contracts. This emphasizes the importance of understanding contract specifications during the bidding process and of knowing each crew's work capacity. If wages are not specified in DOL wage standards and other contract requirements, contract crews can be mixed on a site.

Pertaining to the above ways of mixing programs, the visibility and availability of two levels of training and a level of co-op work provides a clear recognition of achievement and competence to which trainees can aspire. It has been observed that trainees are motivated by wage differences and status, and that co-op workers have that recognition which trainees desire. A co-op worker on a prevocational or vocational crew can be a role model and can perform work to supplement training crew work. On the other hand, co-op work crews assumedly have greater capability, and to dilute that capability by performing tasks not equal to their abilities or to reduce their crew efficiency by adding training members is in direct conflict with the basic goals of each unit.

Chapter Twenty

GROUNDS MAINTENANCE PREVOCATIONAL TRAINING PROGRAM DESIGN

Goal

To prepare units of five to six individuals to a work readiness level using the grounds management/maintenance work environment.

Objectives

1. To establish a training program in work readiness focusing on personal and work adjustment behaviors through utilization of grounds management contract services.
2. To provide suitable training curriculum.
3. To secure grounds maintenance contracts which afford a real work environment, an instructor in grounds management, and adequate equipment and vehicles to carry out the contract work.
4. To utilize other nonhorticultural realistic environments to promote personal and social adjustments and to eliminate maladaptive behavior.
5. To earn contract income of $10,000 - $20,000.

This program provides training to individuals in the context of real work contracts. Productivity will be necessary in order to complete contracts, although the crew's low production level is considered when seeking contracts. What was stated in regard to the greenhouse program may be reiterated here, namely that up to 25 percent of prevocational trainees' training time may be allocated to nonwork training activities.

Curriculum Criteria

The curriculum criteria for the prevocational grounds program is substantially the same as that for greenhouse work. (See Melwood Prevocational Curriculum Criteria in Appendix)

Because a groundsman's work essentially is performed very individually and at distances apart from other workers or supervisors, and because the trainee-worker is subject to distraction, the instructor must pay particular attention to consistency, productivity level, and on-task time behaviors in training. Trainees should have a beginning level of performance in these behavioral qualities in order to be placed in this training program. Safety around machinery and traffic is of key importance. Give close attention to safety and enforce guidelines as described in Chapter 19.

Methods

The grounds maintenance prevocational program, as does the comparable greenhouse program, addresses the basic personal, social, and vocational adjustment needs of the individual. See section on Methods in Chapter 12 for a description of methods, based on the IPP process, which may be easily adapted to the more open grounds maintenance environment. For example, the instructor may devote 15-minute segments with each trainee while the others are less closely watched; in another instance, the organization of the task might pair trainees in one job area, such as raking leaves within a small square.

Evaluation

After the training methods have been established, criteria should be drawn up by which the effectiveness of the curriculum and the teaching methods can be determined. The Melwood Prevocational Curriculum Criteria contains such evaluation tools. See Appendix. The performance of behaviors that define the prevocational curriculum enables the individual to move into vocational training, or sometimes into work co-op or competitive employment if the occupational skills and levels of expected productivity and responsibility already are in the individual's repertoire. Thus, the importance of evaluation is in its showing that a trainee has developed the habits and attitudes which apply generally across the employment situation and that the trainee applies appropriately and productively in the real work environment.

Grounds Maintenance Activities and Contracts

In a program in which training is developmentally oriented, the trainee begins performing the grounds maintenance activities which are the least demanding in terms of safety, skill requirements, and work productivity. Less demanding contracts are acquired for the prevocational program, and trainees use hand tools first and power equipment later. Sophisticated equipment would be less likely to be used with prevocational level trainees.

A vocational skills curriculum on a less sophisticated to a more sophisticated continuum may be found in the Appendix. In general, non-mowing skills are considered lower level skills while the various mowing skills are considered upper level. Trainees start, for example, with hand weeding, raking, mulching, etc., and move to tasks requiring greater physical ability and more complex judgment.

The contracts or areas of a larger contract that are most suitable for prevocational programmatic training generally should be small in size and less difficult to perform. A lawn mowing area that covers flat land, has few trees or markers to circumvent, and requires a fair amount of trimming, weeding, and general cleanup is readily adaptable to a prevocational crew. If necessary, the contract specialist may plan with the instructor for a tractor mower operated by a qualified (handicapped or nonhandicapped) worker to mow a broad acreage while the training crew trims, weeds, and cleans up the contract area.

Other contracts may be sought out which do not require power equipment but which emphasize the physical labor of the trainees. For example, some government agencies have contracted strictly for weeding flower gardens, clearing bike and walking paths, or for general labor in park areas. Some contracts purchase only physical labor and provide necessary equipment. Private builders and apartment complexes have contracted for general trash pickup following completion of building or after summer weekend picnics. These contracts provide a worthwhile financial return and an opportunity to use labor skills complementary to the prevocational training curriculum.

Tools and Equipment

Tools and equipment needed for crews at the prevocational level depend upon the nature of the contracts and the degree of sophistication that the instructors are prepared to use. In many cases, much less is required than is listed here, especially of the power equipment.

A five-person general maintenance and lawn mowing crew should have:

- 2 industrial brooms
- 2 weeding hoes
- 2 flat nursery shovels
- 2 swing blades
- 2 grass clippers (1 hand and 1 power)
- 1 tool box
- 2 hand pruners
- 3 soft rakes
- 1 wheelbarrow
- 2 five-gallon gas cans
- 2-3 21" commercial power mowers
- 1 water cooler
- 1 36" - 40" commercial self-propelled mower

When possible, each worker should have his/her own assigned equipment. It is recommended that only top quality, commercial equipment be purchased.

Staffing

The grounds maintenance instructor at the prevocational level primarily should have a sound background in behavioral teaching methodologies effective for training individuals who are in need of rehabilitation and in an outdoor environment. An additional advantage is knowledge of horticultural grounds maintenance work. A graduate of a university horticultural therapy academic program is ideal. See Appendix for job description. Since the prevocational training lays a foundation for the trainee's future vocational growth, whether in grounds maintenance or another vocational area, the instructor may be able to develop and carry out training strategies which deal with the unstructured and open grounds maintenance environment.

If the training program has as many as three crews of five trainees each, a coordinator of training will be required. In addition, a maintenance person or other staff person with maintenance capability will be needed to keep the grounds equipment repaired and in good working condition.

Trainee Wages

Wages paid to trainees under the prevocational training program must be properly established, monitored, and reported as mandated by DOL regulations. Time trials are used to establish the appropriate wage base. See Chapter 9 on Trainee Wage Determination for complete information.

Budget

A model budget has been developed to show basic income and expense items. See Figure 18. Its value is only in terms of an overview. Each individual program budget necessarily will reflect its own special income and expense items. It is hoped that the percentage of self-earned income to expenditures will stand as a realistic indicator of program potential.

FIGURE 18

GROUNDS MAINTENANCE PREVOCATIONAL BUDGET MODEL

This model budget is based on a work unit of 6 trainees fulfilling service contracts of $15,000 annual value. Trainee wages are based on 720 hours worked annually per trainee and a prevailing wage of $4.00 per hour at an average trainee productivity rate of 30 percent. The formula is:

720 hours × 6 trainees × ($4.00/hour × 30%) = $5,184

Note: self-earned dollars represent 33 percent of the budget.

INCOME		
Contracts	$ 15,000	
Other	29,957	
	$ 44,957	$ 44,957
EXPENSES		
Personnel		
Supervisor	3,750	
Instructor	12,000	
Trainees (6)	5,184	
Fringe/Taxes (15%)	2,093	
	$ 23,027	
Other		
Equipment	$ 4,000	
Equipment Repair	1,000	
Vehicle Payments	4,000	
Vehicle Operating	2,000	
Occupancy	2,500	
Office/Telephone	1,000	
Insurance	600	
Advertising	500	
Administrative Overhead (8%)	3,330	
Miscellaneous	3,000	
	$ 21,930	$ 44,957

NOTES

Chapter Twenty-one

GROUNDS MAINTENANCE VOCATIONAL TRAINING PROGRAM DESIGN

Goal

To train a unit of five to six individuals in grounds maintenance skills, preparing them to function productively at no lower than 50 percent of the minimum standard and to approximate the industry standard in accuracy and speed at skill level through on-the-job grounds maintenance contracts.

Objectives

1. To train five to six individuals in specific grounds maintenance skills.
2. To increase each individual's productivity to beyond 50 percent of the minimum standard.
3. To eliminate any remaining personal and social adjustment problems that prevent their achieving productivity.
4. To provide a suitable training curriculum.
5. To secure grounds maintenance contracts, teaching and support personnel, and adequate equipment and vehicles to carry out the contract work.
6. To reach a contract income goal of $20,000 to $40,000.

The focus in this program is the training of specific skills rather than of general work habits. Accuracy and speed become important along with the ability to master more complex instructions. The vocational training unit will be handling increased work load and pressure as reflected in the increased contract dollar income expectations.

Curriculum Criteria

The curriculum consists of a set of skills across the full range of grounds maintenance tasks, including mowing, mulching, raking, trash pickup, liming, fertilizing, seeding, sodding, planting, trimming, pruning, watering, landscaping, forestry management, snow removal, and the use of hand tools and power equipment pertinent to the above tasks. Completion of this training indicates the ability to work independently or semi-independently in grounds maintenance under the direction of an instructor.

A vocational curriculum must correspond with the work demands of the grounds maintenance contracts, and it may become specialized to the extent that the contract itself is specialized. For example, a contract may demand the use of a specialized piece of equipment or a chemical application. The items in the curriculum are based upon tools, equipment, and work performance, each of which is rated on knowledge, performance, and safety. Other standards pertaining to equipment safety and highway safety are discussed in Chapter 19. Criteria for the knowledge, use, and safety of tools and equipment must be defined in any program to enable the trainee to demonstrate a level of competency. See Grounds Maintenance Curriculum in the Appendix.

Method

Task analysis is the applicable method used in training handicapped individuals in specific skills. The Manual is not aware of any task analysis materials on grounds maintenance. However, the task analysis principles, given in the chapter, Greenhouse Vocational Training Program Design, are adaptable to grounds maintenance training. Figure 19 gives an example of task analysis in training to start a power lawn mower.

Task analysis involves breaking down a skill into its component parts sufficiently for an individual to follow each step behaviorally. The extent to which a skill is broken down depends on the ability or need of the trainee; more capable individuals do not require as many explicit steps, whereas less capable individuals profit from numerous steps. One modification that has proven successful is the use of a minimanual showing, via Polaroid snapshots, the correct and incorrect steps in performing grounds maintenance tasks.

Evaluation

Evaluation is the process of measuring the outcome of the grounds maintenance vocational training program and its effectiveness and the level of contract performance. See Evaluation section in Chapters 10 and 12. It bears emphasizing that recordkeeping is essential in documenting the effectiveness of the curriculum and training methodologies.

Grounds Maintenance Activities

The key to the successful selection of grounds maintenance activities (see Appendix for list of activities and their levels of difficulty) for vocational training is to select grounds maintenance contracts which reflect the opportunity to meet the recognized training and self-earned income goals. Contracts selected for vocational training should include a cross section of all levels of grounds maintenance activities, but should emphasize those tasks which are moderately demanding in terms of safety, skills, and work productivity. If the contract is revealed to be unsuitable for accomplishing the vocational training activities, then the contract should be terminated. However, every effort should be made to effect a positive termination, even at the expense of some training activities.

FIGURE 19

TASK ANALYSIS EXAMPLE

"How to Start a Power Mower"

Mower model: Lawn Boy 21" push power mower

1. Check to see that operator is wearing steel toed shoes or boots and long pants.
2. Disconnect spark plug lead wire.
3. Make quick check that all nuts and bolts are finger tight, especially wheel nuts and blade nut.
4. Check gasoline supply by removing gas tank cap. Replace cap.
5. Reconnect spark plug wire cap to spark plug.
6. Move mower to flat surface.
7. Point exhaust outlet away from persons or vehicles.
8. Open fuel shutoff valve.
9. Place speed control lever in "normal" position.
10. Depress primer two or three times.
11. Turn off-on switch to "on."
12. Place dominant foot on mower housing in designated area to hold mower steady.
13. Pull upward on starter handle (a firm, fully extended pull). Hold started handle until fully recoiled.
14. Pull six times if necessary.
15. After six pulls, if engine does not start, push primer two more times.
16. Repeat steps 13 and 14.
17. Move directly back to mower handles and secure with both hands.
18. To stop engine, turn off-on switch to "off" position.

Grounds Maintenance Tools and Equipment

The tools and equipment needed by a vocational grounds training crew is the same as those for the prevocational crew, with the exception of the following:

- several weed eaters
- a mower for each crew member, two of which mowers should be self-propelled mowers
- one small tractor with attachments and trailer

Staffing

The grounds maintenance instructor of a vocational training crew can have training and experience in either teaching or in horticulture, but the person must have the ability to compensate for whichever is the weak area. Formal training in horticultural therapy/rehabilitation is very desirable, as an instructor with such training would possess knowledge of both the horticultural/technical area and the educational/behavioral/sociological area. See job description in Appendix. This instructor also must be able to deal with production goals, equipment, and the unstructured environment.

As with the prevocational training program, a coordinator of training will be necessary if the program includes three or more training crews, and a maintenance person is needed for the repair and upkeep of equipment.

Trainee Wages

Wages are paid according to DOL regulations as established through time trials as described in Chapter 9.

Budget

Figure 20 shows a model budget with basic income and expense items for a grounds maintenance vocational training program. Each individual program budget must reflect its own special income and expense items.

FIGURE 20

GROUNDS MAINTENANCE VOCATIONAL BUDGET MODEL

This model budget is based on a work unit of 6 trainees fulfilling service contracts of $25,000 annual value. Trainee wages are based on 1,200 hours worked annually per trainee and a prevailing wage of $4.00 per hour at an average trainee productivity rate of 40 percent. The formula is:

1,200 hours × 6 trainees × ($4.00/hour × 40%) = $11,520

Note: self-earned contract dollars represent 44 percent of the budget.

INCOME		
Contracts	$ 25,000	
Other	31,334	
	$ 56,334	$ 56,334
EXPENSES		
Personnel		
Supervisor (25%)	3,750	
Instructor	12,000	
Trainees (6)	11,520	
Fringe/Taxes (15%)	4,091	
	$ 31,361	
Other		
Equipment	$ 5,000	
Equipment Repair	2,000	
Vehicle Payments	4,000	
Vehicle Operating	2,500	
Occupancy	2,500	
Office/Telephone	500	
Insurance	800	
Advertising	500	
Administrative Overhead (8%)	4,173	
Miscellaneous	3,000	
	$ 24,973	$ 56,334

Chapter Twenty-two

GROUNDS MAINTENANCE WORK CO-OP PROGRAM DESIGN

Goal

To operate a successful grounds maintenance business which employs units of five to six handicapped workers.

Objectives

1. To generate sufficient contract income to meet a minimum of 75 percent of costs and with a goal to meet 100 percent of all costs.
2. To earn $60,000 annually per unit.
3. For the total co-op force to consist of a minimum of 75 percent handicapped workers.
4. For each worker to receive no less than 50 percent of the established wage for work performance and to receive fringe benefits equal to those for other agency personnel.
5. To provide steady, 12-month, full-time employment.

It must first be understood that the work co-op is operated as a business and that a sound knowledge of business principles is required. Because at least 75 percent of the employed workers are assumed to be handicapped, a special sensitivity to personnel needs is necessary. This extra sensitivity should not, however, cause the co-op to function as a rehabilitation program. Workers demonstrating a need for basic work adjustment or skill training should be referred to a vocational training program.

Principles of good business management apply to a grounds maintenance operation in the same manner as to a factory, a retail sales store, a service delivery business, or any other commercial concern. Business management includes techniques of administration and leadership, budget and finance, personnel, sales and delivery systems. A person administering a grounds maintenance co-op should have a foundation in basic business knowledge and experience even before knowledge and experience in horticulture or rehabilitation. An administrator lacking in business expertise should take a crash course at a local university and read carefully the more excellent standard works by such recognized management experts as Peter Drucker. The failure rate for small businesses in the United States is high, primarily because the business person did not have adequate knowledge to operate the business properly and successfully.

Factors in Operating a Successful Grounds Maintenance Co-op

Administration

The bottom line in any business is profits: is the business efficiently administered with good product sales/service to produce the needed and desired profit dollars. This profit goal is the same for a work co-op. Realistically, however, most co-ops, given today's state of the arts, will be fortunate to earn 75 to 100 percent of their total costs and will not have the pleasure of dealing with actual profits. It is hoped this situation will change as the profession's business and management experience grows.

Important elements of work co-op administration are:

1. Financial management
2. Personnel
3. Physical plant and equipment
4. Contract management

Financial Management

As was stated previously, the work co-op administrator must have a knowledge of budget and finance and how to compose financial plans and then implement those plans throughout the year. As with every business, the co-op will have an annual budget which serves as the major planning tool. A sample work co-op budget is printed in Figure 21.

An important element in financial planning for a new co-op business is the startup costs. Such costs are relatively small compared with the cost of a greenhouse or most other business ventures. A small program employing only a few persons will need only a minimum amount of equipment, especially if work is performed primarily for residential or small business customers. A complete description of grounds equipment and their sources can be found in this chapter.

Personnel

A business which becomes a success and then remains successful is almost always revealed to have excellent personnel policies and practices. Employees who are valued, who earn fair wages and receive good benefits, and who are treated fairly and challenged creatively will respond in a more positive way — and that way can only benefit the program.

Personnel policies - It is important that all employees know about the company employing them, what is expected of them, the guidelines pertaining to their jobs, how they will be evaluated, and what benefits they will receive. All such policies should be set in writing in an employee handbook which is given to each person at the time he or she is hired. This rule applies to handicapped and nonhandicapped staff alike.

It is the responsibility of management that employees understand, to the fullest extent possible, these personnel policies, particularly in the case of handicapped employees who might suffer from such lack of consideration when employment standards are not followed because they were not understood. Therefore, it is imperative that rules are made clear when they pertain to attendance, proper dress (e.g., *only* steel-toed shoes), care of equipment, penalties for inappropriate actions and conduct, productivity expectations, and the period of evaluation or probation before a person is considered a permanent employee.

Wages - Regulations governing payment of wages based upon time trials are described fully in Chapter 9, "Wage Determination."

Staffing - When employing qualified staff for a grounds maintenance work co-op, very little consideration is given to the prospective staff's strengths in meeting the training and social needs of the handicapped workers. Primary consideration must be given to hiring staff whose expertise lies in the business and operational aspects of administration, supervision, maintenance, etc.

Essential staff positions at a work co-op include an administrator, field supervisor, equipment maintenance person, and work crew foremen. Depending upon how extensive is the operation and the level of contracts obtained, one person might fill two or more of these positions. Job descriptions can be found in the Appendix.

In a small grounds maintenance business, the positions of administrator and field supervisor will almost surely be filled by the same person. But with five or more work crews and $250,000 to $500,000 in contract income, both an administrative manager and a field supervisor will be required.

The administrator should have academic training and sound experience in business management. This person will be responsible for the total smooth operation of a profitable business, including obtaining appropriate contracts through bidding and negotiation.

The supervisor should be thoroughly knowledgeable and experienced in grounds maintenance work, for he/she is responsible for overseeing contract performance. Scheduling work crews and equipment at appropriate contract sites according to contract requisites, ascertaining that work is performed according to contract specifications and in a quality manner, and working with both the administrator and foremen in a middle management role are the primary duties of the supervisor.

If the work co-op is going to perform landscaping work, either drawing up the design or implementing that design plan, at least one member of the staff must be trained and experienced in landscape architecture.

Work Crews - As has been stated earlier and is explained in Chapter 23, "Contracting," up to 25 percent of co-op workers may be nonhandicapped. Thus, the co-op is able to have on staff one or more persons to operate heavy, specialized machinery and equipment, such as a tractor or backhoe, which the program's workers might be unable to manage and yet which would be needed for many grounds management contracts.

All workers, handicapped and nonhandicapped, should be assigned to work crews according to their ability and then these crews can be scheduled accordingly in order to maximize worker efficiency and business cost effectiveness. For example, low-functioning workers are particularly valuable for such tasks as hand weeding, trimming around obstacles such as cemetary head stones and fences, picking up trash, and mulching. Another specialty crew might be adept at certain landscaping jobs as planting trees and shrubbery or constructing walks or walls. Other persons may find they work well in concert when operating commercial mowers on a large expanse of grass. These abilities of individuals and crews must be considered in order for contract work to be performed most efficiently and therefore most profitably. Certain contracts may best be completed with a crew mixture of low and high level workers.

Evaluation procedures should be set up and records maintained for each handicapped worker. These records are in addition to wage determination and time trial records and are especially important in determining cost effectivenesss, productivity, and work qualtiy for each individual worker and crew unit.

In addition, periodic evaluations will reveal the progress being made by a worker as more work experience is translated into a higher level of productivity. Although some workers will remain with the co-op indefinitely, others will be able to obtain competitive jobs in the community. And this is another difference between the work co-op and a commercial enterprise: The co-op does not attempt to keep its workers when it is clear that they are ready to move into the community into higher paying, more attractive employment. In fact, this should be one of the goals of the co-op, and every "promotion" from co-op to community should be regarded as a successful side product of the business enterprise.

Naturally, such movement of workers calls for long-range planning and cooperation with affiliated training programs to insure that trained workers are available to fill co-op vacancies on grounds crews.

Physical Plant and Equipment

Site - The grounds maintenance co-op should be located as close as possible to its contract market area. Particularly when fuel is becoming ever more expensive, reduction in travel time means reduced contract costs and better work efficiency. Crews can spend more time on work sites rather than in transit.

Ideally, the size of the co-op physical plant location should offer one to two acres which would allow for:

- adequate administration and support offices
- employee lockers and conference area
- vehicle and equipment maintenance
- covered storage for tools and materials

- secure storage/parking area for vehicles and equipment
- on-site gasoline pump
- trash disposal area

It is very important that facilities should allow for all equipment and tools being properly stored under shelter out of the weather. Even large equipment such as tractors should be sheltered from the weather to reduce the incidence of malfunctioning.

Equipment - The work co-op should have a complete supply of standard commercial tools and equipment appropriate for the number of workers and types of contracts. This supply should include backup equipment. It is not cost effective for a crew to be unable to complete the day's scheduled work because of mower malfunctions. In addition, a stock of maintenance tools and spare parts should be kept in the crew vehicle so simple maintenance and repairs can be accomplished on site.

Each worker should have his/her own assigned set of tools when at all possible. Although such an extensive supply of tools might seem excessive, it has been found that an individual assumes responsibility for his or her "own" tools and their care and maintenance. Unassigned tools are much more readily lost or damaged.

Following is a list of standard tools and equipment needed for a regular grounds maintenance business. It is wise to visit distributors to compare models and prices which can vary widely.

industrial brooms
weeding hoes
square and pointed shovels
swing blades
hand grass clippers
power grass clippers
hand pruners
lawn and garden rakes
gasoline powered edgers
weed eaters
shears
power hedge trimmers
leaf blowers
wheelbarrows
21" power mowers
flatbed trailer (6-ton capacity)
36" - 40" self-propelled power mowers or small 8-12 horsepower tractors
heavy duty tractor with mower, post hole auger, blade, front end bucket
limb saws
chain saws
loppers
spreaders
tool boxes
equipment spare parts (mower belts)
water coolers
gas cans
first aid kits
fire extinguishers

Companies which specialize in sales of grounds maintenance equipment will have complete catalogues for both tools and equipment. Some of the major brands of power equipment with company addresses are:

Gravely
One Gravely Lane
Clemmons, N.C. 27012

Lawn-Boy
Gale Products
Galesburg, Ill. 61401

Toro
The Toro Company
8111 Lyndale Ave. South
Minneapolis, Minn. 55420

Goodall
Div. of Bunton Company
1405 Bunton Road
Louisville, Kentucky 40213

Powermow
F. D. Kees Manufacturing Co.
700-800 Park Avenue
Beatrice, Nebraska 68310

Yazoo
Yazoo Manufacturing Co.
P.O. Box 4207
Jackson, Miss. 39216

Howard
Howard Commercial Turf
Equipment, Inc.
9719 Olive Boulevard
St. Louis, Missouri 63132

Quakermayd
Sterner's Company
Quakertown, PA.

Hoffco, Inc.
358 N. W. F Street
Richmond, Ind. 47374

Jacobsen
Jacobsen Div. of Textron, Inc.
1721 Packard Avenue
Racine, Wisconsin 53403

Weed-Eater, Inc.
10515 Harwien Drive
Suite 138
Houston, Texas 77036

Green Machine
HMC
22133 South Vermont
Torrance, CA. 90502

Long
Long Manufacturing N. C. Inc.
Box 1139
Tarboro, N.C. 27886

John Deere
Moline, Illinois 61265

Sensation
The Sensation Corporation
3601 North 16th Street
Omaha, Nebraska 68110

In selecting commercial power mowers, some operators have found that the metal chassis of some models are very heavy and can be difficult to maneuver. Equipment with plastic housings can be lighter and easier to use but still durable. Also, consideration should be given to the type of motor selected. In many cases, a two-cycle engine reduces the chance for breakdown which might occur with four-cycle engines which require oil to be maintained at the proper level.

When contract specifications create special requirements, such as tree spraying, digging a large number of holes, etc., it may prove more cost effective to rent special tools and equipment rather than purchase them. Special items, from hand or powered post hole diggers to a backhoe, are readily available from any equipment rental business.

A crew cab truck

Vehicles - The work co-op must have vehicles to transport the work crew and equipment to and from contract sites. The type and size of vehicles will, of course, depend on the number of persons and amount of equipment to be transported. It is possible to utilize a van which has sufficient cargo space for small equipment in addition to seating for six passengers. A pickup truck is very useful in a fleet of vehicles. However, a pickup has limited seating space, and individuals should *never* be in the open bed of a moving truck. A truck with a dump bed may prove beneficial, depending on contract demands.

One of the most desirable vehicles for use by a grounds co-op is a six-passenger crew cab or super cab truck. This style truck has both front and rear seats located in the enclosed cab plus an open bed in back for equipment. Thus, a six-person crew plus tools and equipment can be easily and safely transported as needed. All vehicles should be equipped with heavy duty trailer hitches. Thus, additional heavy equipment can be secured to a flatbed trailer and hitched to the crew cab or other vehicle. Crew cab trucks are manufactured by Ford Motor Company, Chevrolet Motor Division, and Dodge Motor Company.

The name of the work co-op should be prominently displayed on all vehicles for advertising and public relations value in the community.

Typical grounds maintenance equipment and vehicles

Maintenance and Operation Considerations - Proper and continuous maintenance, including preventive maintenance, of tools, equipment, and vehicles is required to maintain work efficiency. Performance of work depends on the equipment, and heavy usage means breakdowns. A grounds operation of any size should have an in-house maintenance capability with at least one full-time maintenance person. During the peak of the grounds maintenance season, the maintenance person may be required to work in the evenings and/or on weekends after the equipment has been returned by the work crews so the equipment will be ready for use the next morning.

Correct matching of equipment to the contract to be performed is another essential for efficient operation. Tools and equipment should be fully utilized in the tasks for which they were designed. Straining a piece of equipment to perform beyond its design capability is not good management and can ruin costly grounds equipment.

Contracts

The selection of contracts and thereafter the scheduling of contract work to be performed should be based, for maximum results, on the combined productivity of individual workers, the standard crew unit, and the specialty crews. That is, a combination of co-op strengths will produce maximum productivity. The total co-op labor force should consist of a minimum of 75 percent handicapped workers (required for participation in NISH contracts) and a maximum of 25 percent nonhandicapped workers.

A list of types of contracts is found in Chapter 23, "Contracting Model for Grounds Maintenance." Co-op contracts will usually be more demanding than those performed by the prevocational or vocational training crews. Contracts can be initiated to correspond with the capability and productivity of the work co-op and can include landscaping if there exists that staff and worker expertise.

Contract and equipment scheduling and crew assignments all are geared toward maximizing worker efficiency and cost effectiveness from a business standpoint.

Professional Resources and Information

As in any industry, a person in the grounds maintenance and landscaping business must keep abreast of what is occurring in the field. Advances in scientific knowledge, techniques, and equipment are being made constantly. To be competitive in business, an administrator must be up-to-date on the latest developments.

Instructional materials and other basic information plus the latest in research findings can be obtained from industry, professional societies, and university sources. An excellent example of instructional materials are those published by:

Department of Horticulture
The Pennsylvania State University
University Park, Pennsylvania 16802

Periodicals which serve the industry include:

Weeds, Trees, and Turf
9800 Detroit Avenue
Cleveland, Ohio 44102

Grounds Maintenance
1014 Wyandotte Street
Kansas City, Missouri 64105

Lawn Care Industry
9800 Detroit Avenue
Cleveland, Ohio 44102

Associations whose membership consists of professionals in the grounds and landscaping business are:

Professional Grounds Maintenance Association

Associated Landscape Contractors of America

National Landscape Association

Horticultural Research Institute

Professional Lawn Care Association of America

Budget

A model grounds maintenance work co-op budget has been developed to show basic income and expense items. See Figure 21. Each individual program will, of course, reflect its own special income and expense items. It is hoped that the ratio of self-earned income to expenditures will stand as a realistic indicator of program potential.

FIGURE 21

GROUNDS MAINTENANCE CO-OP BUDGET MODEL

This model budget is based on a work unit of 5 co-op workers fulfilling service contracts of $60,000 annual value. Co-op worker wages are based on 1,750 hours worked annually per worker and a prevailing wage of $4.00 per hour at an average trainee productivity rate of 75 percent. The formula is:

1,750 hours × 5 workers × ($4.00/hour × 75%) = $26,250

Note: self-earned contract dollars represent 78 percent of the total budget.

INCOME		
Contracts	$ 60,000	
Other	16,614	
	$ 76,614	$ 76,614
EXPENSES		
Personnel		
Contract Administrator (20%)	3,600	
Supervisor (20%)	3,000	
Foreman	10,000	
Co-op Workers (5)	26,250	
Fringe/Taxes (15%)	6,428	
	$ 49,278	
Other		
Equipment	$ 6,000	
Equipment Repair	2,000	
Vehicle Payments	4,000	
Vehicle Operating	3,000	
Occupancy	2,000	
Office/Telephone	500	
Insurance	1,000	
Advertising	1,000	
Administrative Overhead (6%)	4,336	
Miscellaneous	3,500	
	$ 27,336	$ 76,614

NOTES

Chapter Twenty-three

CONTRACTING MODEL FOR GROUNDS MAINTENANCE

Goal

The goal in grounds maintenance contracting is to secure contract sites which are suitable for the training or work needs of the persons served while producing sufficient income to meet budgeted requirements.

The Contracting Plan

The contracting component should be planned so it is compatible with the mission of the organization and the services of the horticultural center. Conscientious effort must be exerted to guard against contract dollars controlling training program design. However, the work co-op often will be required to adjust to new contract specifications.

Marketing Research and Analysis

Very early in the planning stages, a professional marketing consultant should be hired to make a market analysis and compose a marketing plan. Such a professional will be familiar with the competitive forces in the business world and can advise on the principles for establishing a successful contracting business. Recommendations for local consultants may be obtained from the local Chamber of Commerce, or the following sources may be helpful.

The Association of Consulting Management Engineers (ACME)
230 Park Avenue
New York, NY 10017
(212) 697-9693

ACME certifies large consulting firms and offers a free membership directory.

The Association of Management Consultants (AMC)
331 Madison Avenue
New York, NY 10017
(212) 490-3113

AMC members are small consulting firms. A detailed directory is $50, but a mini-directory with capsule descriptions is free.

The Institute of Management Consultants (IMC)
19 West 44th Street
New York, NY 10036
(212) 921-2885

IMC certifies individual consultants. A directory of members with their specialities is $10.

Directory of Management Consultants
Templeton Road
Fitzwilliam, NH 03447
(603) 585-2200

A list of a wide range of consultants with their areas of specialization is available for $37.50.

Any cost associated with hiring a consultant is a wise investment. If funds are not available for this expenditure, consider applying for a grant, perhaps a technical assistance grant, or pooling resources with one or more other centers which serve the handicapped in your area and which also would benefit from a marketing survey.

Marketing research and analysis should reveal:

- types of contracts available
- how to acquire contracts
- local competition
- potential income
- budget requirements
- capitalization needed

This marketing process requires business acumen and financial skills and knowledge seldom available in the rehabilitation field. Hence, professional consultation is sought to establish the contracting program on a sound basis.

The analysis of the marketing information will reveal the most suitable and feasible contracts to be pursued. The stage of development of the grounds maintenance program and the total organization must be considered; then a plan for marketing the grounds services can be organized. Such a plan is requisite when the center applies for capitalization loans. The Small Business Administration and commercial banking institutions will usually require such a plan in writing before considering a loan application.

Making Contract Decisions

Decisions must be made on what types of contracts will be sought. These decisions will be based on capabilities of personnel and equipment, what work is available, and the suitability of the contract to the goals of the training or work co-op program.

The following criteria should be considered when making basic contracting decisions.

1. Type of work desired
    - manual, non-skilled labor using hand tools only
    - non-skilled and semi-skilled manual labor using hand tools and small power equipment, e.g., trash pickup, clearance of bike or walking paths, grounds improvement
    - semi-skilled and skilled labor using a full range of hand tools and small and large power equipment; grounds maintenance, including mowing, liming, fertilizing, mulching, raking, etc.
2. Suitability of site to work skills
    - simple elementary training
    - more demanding, higher level training
    - full-scale work site
3. Capability of personnel (trainees, co-op workers, instructors)
    - productivity rate on a crew basis
    - ability to handle equipment
    - endurance (half-day versus full day's work)
4. Type of training to be performed (prevocational, vocational)
5. Self-earned income expected
6. Equipment capability
    - What equipment is available including backup, and what can it do? What might be needed?
    - Are personnel trained to operate the equipment?
    - What equipment maintenance will be required?
7. Readiness to begin contract
    - When will crews, instructors, and equipment be available for the contracting work (planning should be done 3 to 6 months in advance).
8. Distance factor
    - What is the feasible radius of travel from the horticultural center for contract work?

Some recommendations which will assist in planning, assessment of program resources, and recognition of limitations are:

- Start out with contracts which offer simple cutting operations rather than with contracts requiring involved, more technical horticultural expertise such as soil analysis, fertilizing, disease and insect treatments, seeding, etc.
- Prevocational programming may involve several hours per day or per week in nonhorticultural work; during vocational training, the number of hours spent in occupational skills is greater. At the work co-op level, 100 percent of the worker's time is spent in horticulturally-related production

labor. The contract marketing specialist must keep this in mind during contract selection.

- It is possible to contract for only a section of a work area. For example, a contract with a military base may call for cutting only their ball fields (a flat, uncluttered area) during the first year. The contract then can be enlarged during subsequent seasons, taking on more difficult terrain and types of services performed.
- Some contracts require only labor to be provided by the contractee while equipment and materials are supplied by the procuring agency. In these cases, no investment in equipment and materials is required.
- Travel to and from a work site is time consuming, expensive (workers must be paid for travel time), and potentially hazardous to equipment. A maximum operational radius of 25 miles is recommended.

Contract Marketing Specialist

The grounds contract marketing specialist seeks out and procures contracts which are suitable for implementation by the training and/or work co-op crews. This individual might carry out these responsibilities in conjunction with those of another position such as work co-op manager. However, contracting is a time-consuming job, especially for the training center or work co-op with several grounds crews. The present success and the future growth and development of the grounds program can rest on the ability of the contract marketing specialist.

It should be noted that the contracting specialist focuses on securing work contracts, not on insuring that training is accomplished. However, it is imperative that the contract marketing specialist be familiar with the training program and the work capabilities of the grounds maintenance crews. The marketing specialist must develop good communications with the training coordinator and the work co-op manager to insure suitability of contracts, to prevent work overload, and to see that contracts are completed according to specifications.

A complete job description for the grounds contract marketing specialist is found in the Appendix. (In government work, the job title of marketing specialist is often called a contracting specialist or procurement specialist.)

Standard Categories of Contracts

Several categories of grounds services have been identified as being desired in private and public contracts.

1. General manual labor
    - trash pickup on lawns and roads
    - general weeding
    - mulching planted areas
    - large area grounds clearance
    - cleanup around new home construction

    - fence line management
    - forest care
2. Basic grass mowing and plant maintenance
    - lawn cutting
    - trimming and edging lawn borders
    - weeding planted areas
    - trimming shrubs
3. Grounds maintenance/management
    - cutting of large lawn acreage
    - liming, fertilizing, raking, mulching, edging, aerating, spraying
    - grounds clearance and improvements
    - hedge trimming
4. Landscaping
    - preparing formal landscape design
    - planting flowers, shrubs, and trees according to landscape design
    - border area development
    - construction of retaining walls, walks, etc.
5. Other wintertime exterior work
    - snow removal
6. Custodial maintenance
    - indoor janitorial work (may be very advantageous to include as part of a contract). By including janitorial work, a seasonal contract may be turned into a more attractive 12-month contract.

Several of the above categories may be included on a single contract, or a contract may be limited to employing only general unskilled labor and not even include lawn cutting.

Sources of Grounds Contracts

The list of possible grounds contract opportunities is long. The following examples are listed in order of increasing work difficulty and levels of potential income and summarize some basic advantages and disadvantages of each type.

1. Individual homeowner
    - Size of Site: less than ¼ acre to several acres
    - Advantages:
        - — Relatively small, easily performed contract
        - — Sympathetic contractor
        - — Usually a one-half day to one-day activity
        - — Likely to be close to the contractee
        - — Payment is immediate and facilitates cash flow

- Disadvantages:
  - — Producing a significant level of income means satisfying a large number of different contractors.
  - — Widely varying expectations of the homeowner that are sometimes unrealistic
  - — Individual homeowner may preoccupy and dominate instructor's time.
  - — Small financial income

2. Local community establishments
   - Churches, town halls, city/county buildings, libraries, nursing homes, civic clubs, small businesses
   - Advantages:
     - — Readily accessible for contract proposals
     - — Small areas which usually do not require large, sophisticated equipment
     - — Expectation likely to be realistic
     - — Favorable community exposure
     - — Moderate financial income
   - Disadvantages:
     - — Bidding process may be highly political
     - — Some establishments expect work to be done at less than a realistic, competitive price because of a social, vocational, or community service relationship with contractee.

3. Large commercial and public contracts
   - Public contracts: federal, state, and local government grounds, parks and recreation areas, military bases, public roadsides and rights of way.
   - Private contracts: utilities companies, apartment complexes, schools, hospitals, cemetaries, banks, industrial sites, retail chain outlets
   - Advantages:
     - — Large sites require travel to only one location daily.
     - — Limited number of contractors to be satisfied
     - — Significant income source
     - — Often less cumbersome to mow and maintain, adaptable for training tasks
   - Disadvantages:
     - — Very competitive bidding process
     - — Access to bidding process sometimes difficult
     - — Delayed payments of large sums affect cash flow.
     - — Loss of a single contract can be a severe financial blow.
     - — May require sophisticated, expensive equipment

Marketing Strategies: NISH and Other Opportunities

In most cases, the new grounds maintenance training or work co-op program will not have developed highly specialized strategies for securing contracts—strategies that would involve public relations, expensive advertising, or a full-time marketing person. How, then, does it locate and obtain contracts? Four common avenues for developing grounds maintenance contracts are direct inquiries, advertisement of the center, the *Commerce Business Daily*, and National Industries for the Severely Handicapped (NISH). It should be noted that each avenue is not an end in itself. An effective contracting effort will consistently utilize each avenue, although greater emphasis may be placed on one or more.

Direct Inquiries

Particularly for the new contractee, direct inquiry, accomplished by knocking on doors of nearby businesses or government offices and asking about grounds contract services needed, is the quickest way to obtain contracts. The contractee's board members, staff, and professional and business community contacts should offer assistance by directing the marketing specialist to potential contracts.

Advertising

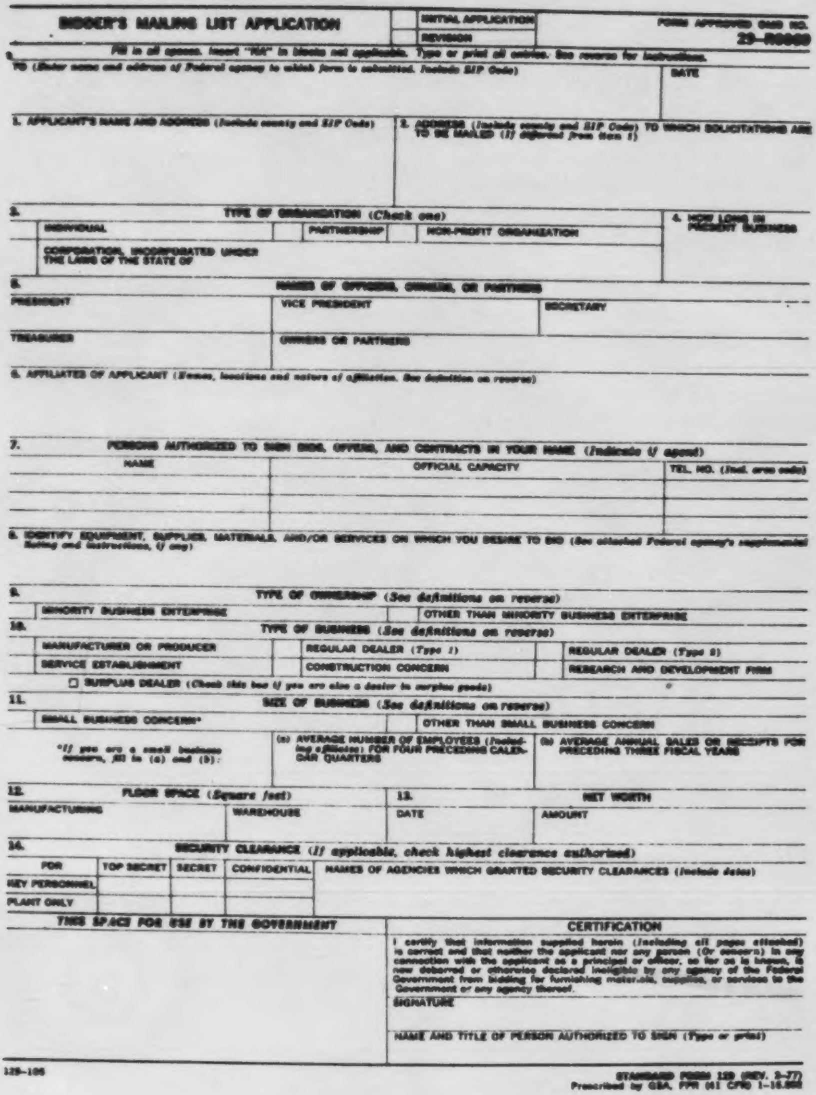
The budget program should include allocations for advertising the contractee's services. Advertising is essential for obtaining initial contracts, upgrading existing contracts, and, in general, exposing the community to the credibility of the contractee. Some common means of advertising that have been found useful are:

- Yellow Pages ad
- Logo and name on vehicles indicating the nature of services offered and phone number
- Newspaper ads in garden and/or classified sections
- Advertising flyers
- Letters of introduction to prospective purchasers
- Displays at flower and garden shows
- Inclusion on governmental and private industrial bidder's lists. The standard government form number 129 (see Figure 22) may be filled out and sent to any government agency with which the horticultural center wishes to do business. The center then will be placed on the agency's bidders list and will be notified of all contracts which are available for bids.

Commerce Business Daily

The *Commerce Business Daily* (available from the U.S. Superintendent of Documents, $105.00 yearly) contains invitations for bid, contract awards, and

FIGURE 22



BIDDER'S MAILING LIST APPLICATION	☐ INITIAL APPLICATION ☐ REVISION		FORM APPROVED OMB NO. 29-R0069

Fill in all spaces. Insert "NA" in blocks not applicable. Type or print all entries. See reverse for instructions.

TO (*Enter name and address of Federal agency to which form is submitted. Include ZIP Code*)	DATE
1. APPLICANT'S NAME AND ADDRESS (*Include county and ZIP Code*)	2. ADDRESS (*Include county and ZIP Code*) TO WHICH SOLICITATIONS ARE TO BE MAILED (*If different from item 1*)

3. TYPE OF ORGANIZATION (*Check one*)

☐ INDIVIDUAL ☐ PARTNERSHIP ☐ NON-PROFIT ORGANIZATION

☐ CORPORATION, INCORPORATED UNDER THE LAWS OF THE STATE OF

4. HOW LONG IN PRESENT BUSINESS

5. NAMES OF OFFICERS, OWNERS, OR PARTNERS

PRESIDENT	VICE PRESIDENT	SECRETARY
TREASURER	OWNERS OR PARTNERS	

6. AFFILIATES OF APPLICANT (*Names, locations and nature of affiliation. See definition on reverse*)

7. PERSONS AUTHORIZED TO SIGN BIDS, OFFERS, AND CONTRACTS IN YOUR NAME (*Indicate if agent*)

NAME	OFFICIAL CAPACITY	TEL. NO. (*Incl. area code*)

8. IDENTIFY EQUIPMENT, SUPPLIES, MATERIALS, AND/OR SERVICES ON WHICH YOU DESIRE TO BID (*See attached Federal agency's supplemental listing and instructions, if any*)

9. TYPE OF OWNERSHIP (*See definitions on reverse*)

☐ MINORITY BUSINESS ENTERPRISE ☐ OTHER THAN MINORITY BUSINESS ENTERPRISE

10. TYPE OF BUSINESS (*See definitions on reverse*)

☐ MANUFACTURER OR PRODUCER ☐ REGULAR DEALER (*Type 1*) ☐ REGULAR DEALER (*Type 2*)

☐ SERVICE ESTABLISHMENT ☐ CONSTRUCTION CONCERN ☐ RESEARCH AND DEVELOPMENT FIRM

☐ SURPLUS DEALER (*Check this box if you are also a dealer in surplus goods*)

11. SIZE OF BUSINESS (*See definitions on reverse*)

☐ SMALL BUSINESS CONCERN* ☐ OTHER THAN SMALL BUSINESS CONCERN

**If you are a small business concern, fill in (a) and (b):*	(a) AVERAGE NUMBER OF EMPLOYEES (*Including affiliates*) FOR FOUR PRECEDING CALENDAR QUARTERS	(b) AVERAGE ANNUAL SALES OR RECEIPTS FOR PRECEDING THREE FISCAL YEARS

12. FLOOR SPACE (*Square feet*)		13. NET WORTH	
MANUFACTURING	WAREHOUSE	DATE	AMOUNT

14. SECURITY CLEARANCE (*If applicable, check highest clearance authorized*)

FOR	TOP SECRET	SECRET	CONFIDENTIAL	NAMES OF AGENCIES WHICH GRANTED SECURITY CLEARANCES (*Include dates*)
KEY PERSONNEL				
PLANT ONLY				

THIS SPACE FOR USE BY THE GOVERNMENT	CERTIFICATION
	I certify that information supplied herein (*Including all pages attached*) is correct and that neither the applicant nor any person (Or concern) in any connection with the applicant as a principal or officer, so far as is known, is now debarred or otherwise declared ineligible by any agency of the Federal Government from bidding for furnishing materials, supplies, or services to the Government or any agency thereof.
	SIGNATURE
	NAME AND TITLE OF PERSON AUTHORIZED TO SIGN (*Type or print*)

129-105

STANDARD FORM 129 (REV. 3-77)
Prescribed by GSA, FPR (41 CFR) 1-16.802

subcontracting leads on major federal government contracts. Notification for most of these contracts averages 45 days. While this often is not sufficient lead time for the novice agency to complete procedural requirements, these advertisements provide good leads for "where the contracts are" and can be pursued for subsequent opportunities. Contracts made in one season can be nurtured for future development.

NISH

National Industries for the Severely Handicapped (NISH) arose out of amendments to the Wagner-O'Day Act of 1938 through P.L. 92-28, Javits-Wagner-O'Day. This legislation created NISH as an independent, nonprofit organization designed to coordinate and facilitate sheltered workshops' sales of commodities and services to federal government agencies. NISH offers technical assistance, allocates orders for goods and services, recommends prices, and oversees, monitors, and inspects the activities of workshops utilizing NISH provisions. NISH assists the prospective contractee in meeting the regulatory requirements of the law and aids in the evaluation of individual workshops' capabilities to produce commodities or services for the federal government. Centers who wish to participate in NISH contracts must meet qualification criteria and provide their commodity or service within government standards. NISH provisions are directed primarily to sheltered workshops, although training programs may also qualify under certain circumstances. There are five criteria for meeting NISH qualifications:

1. Bona fide nonprofit agency status.
2. Direct labor requirements. The workshop must employ the severely handicapped at a quota of not less than 75 percent of the total manhours of direct labor. Supervisory, administration, inspection, and shipping (indirect labor) personnel are excluded from direct labor calculations.
3. Demonstrate production capability in quality, quantity, and timeliness.
4. Meet standards of safety set by the Department of Labor and Occupational Safety and Health Administration.
5. Continue ongoing certification as products and/or services are marketed.

The initial certification requirements are met by documentation of these requirements and a completed Workshop Inventory. Services provided by NISH are offered through a 4 percent commission on contracts awarded. In the field of grounds maintenance and related service contracts, NISH has negotiated contracts with military bases, FAA centers, grounds areas surrounding federal buildings, and national parks.

NISH attempts to generate contracts for workshops throughout the nation; it is the principal responsibility of the workshop to identify potential contracts. The importance of engaging NISH in contract negotiations lies with the "set-aside" provisions of NISH that apply in the following manner.

When the government agency procurement officer is contacted by the contract marketing specialist and negotiations are begun, performance specifications such as hours of work, wages, training needs, equipment to be used, and transportation of workshop employees must be spelled out in detail (see Figures 23 a — d). If the federal agency procurement office agrees that a contract is feasible under NISH, then this material is submitted to the NISH regional office. See Appendix. The proposed contract is reviewed and modified by NISH, if necessary. The contract is, in effect, negotiated by NISH as a broker and then subcontracted to the horticultural center. With the award of the contract, it is removed from the annual bidding process and, all factors remaining stable, the workshop has a predictable source of income. The application procedure usually requires up to nine months to complete. The contract is renegotiated annually through NISH to allow for changes in specifications, labor costs, or other expenditures. Federal contracts which a workshop already holds may be converted to NISH provisions in order to remove them from the competitive bidding process.

Contact with NISH may be made by writing:

NISH
4350 East West Highway, Suite 1120
Washington, D.C. 20014

Contract Bidding

You have a potential purchaser; your instructors and crews will be ready in a couple of months; and equipment and operating monies are available. How much do you charge the customer? How do you figure your costs?

The process of contract estimating is a simple one of knowing all contract costs and how to allocate them. The NISH formula in Figure 23 is an excellent guide. Since each contract incurs unique characteristics, only the most general comments will be given here. The breakdown in the formula includes:

1. Expendable Supplies (fuel, oil, fertilizers, mulches, etc.)
2. Direct Labor Costs (the estimated wages of co-op workers or trainees)
3. Burden Costs (itemized in Figure 23a).

The direct labor cost is computed in total worker hours of trainees or workers. This factor is most difficult to estimate without a baseline of the workers' productivity. Moreover, each contract will require varying numbers of worker hours based upon the terrain and the nature of the work. Acres and acres of flat ground or gently rolling hills with few trees or borders and no above ground markers can be mowed with a tractor in a fraction of the time it may take a handful of co-op workers to do a half-acre of ground peppered with flower gardens, trees, signs, and walkways, to say nothing of further difficulty if that area is on a hillside.

To establish worker hours, several means may be used:

- Confer with the purchaser about previous performance time.
- Request to do a trial run on the grounds area (this is not unreasonable, and may be performed with pay).
- Write a contract for a set amount and include a clause for renegotiation based on actual experience.

FIGURE 23a

COST BREAKDOWN — CONTRACT SERVICES

SERVICE ______________________________ CNA: ____________

LOCATION ______________________________ DATE: ____________

(1)	(2)	(3)	(4)	(5)
DESCRIPTION (Base Date)	OLD ( )		NEW ( )	% CHANGE
1. **EXPENDABLE SUPPLY COST**				
Expendable Supplies (ATCHMT A)				
2. **DIRECT LABOR COST**	Hrs. ______	Hrs. ______	Hrs. ______	
Old Average Workshop Wage $______/hr				
New Average Workshop Wage $______/hr				
3. **BURDEN COST**				
a. Indirect Labor (Incl. Supervision)				
b. Direct Labor Fringe (ATCHMT B)				
c. Indirect Labor Fringe (ATCHMT B)				
d. Equipment Depreciation (ATCHMT C)				
e. Vehicle Operation (ATCHMT D)				
f. Rental ______________				
g. ______________				
h. ______________				
i. Other Burden				
TOTAL BURDEN				
4. **SUB CONTRACT COST**				
5. **TOTAL SERVICE COST** (Divide by .96 to obtain Base Price)				
6. **BASE PRICE**				

FIGURE 23b

FRINGE BENEFITS

☐ DIRECT LABOR
☐ INDIRECT LABOR

LINE NO.	DESCRIPTION	OLD	NEW
1.	Total Labor Hours Performed to Provide Service (Total Hours Worked)		
2.	Nonhandicapped Labor Hours (Standard Hours) (For Direct Labor, Line 2 of FMP-9)		
3.	Average Wage (For Direct Labor, Line 2 of FMP-9)	$	$
4.	Total Labor Cost (Multiply Line 2 by Line 3; For Direct Labor, same as Line 2 of FMP-9)	$	$
5.	Average Hourly Earnings (Divide Line 2 by Line 1 and Multiply by Line 3)	$	$
6.	Number of Holiday and Vacation Hours (Multiply Number of H&V Days by 8 Hours)		
7.	Average Man-Years (Divide Line 1 by ____________ Hours [2080 Minus Line 6])		
8.	Health and Welfare Rate (\$ / Hour)	$	$
9.	Hourly Holiday and Vacation Pay and Benefits (Add Lines 5 and 8)	$	$
10.	Payroll Tax Rates		
	a. FICA	%	%
	b. Unemployment	%	%
	c. Accident Insurance	%	%
	d. Other	%	%
	e. Total Payroll Tax Rates	%	%
11.	Total Health and Welfare Benefits (Multiply Line 1 by Line 8)	$	$
12.	Total Holiday and Vacation Pay and Benefits (Multiply Line 6 by Line 7 by Line 9)	$	$
13.	Payroll Taxes		
	a. On Pay (Multiply Line 4 by Line 10e)	$	$
	b. On Holidays and Vacations (Multiply Line 5 by Line 6 by Line 7 by Line 10e)	$	$
	c. Total Payroll Taxes (Add Lines 13a and 13b)	$	$
14.	TOTAL FRINGE BENEFITS (Add Lines 11, 12 and 13c)	$	$

FIGURE 23c

EQUIPMENT DEPRECIATION

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
DESCRIPTION	YEAR OF PURCH	USEFUL LIFE—YEARS	PERCENT USED ON SERVICE	NUMBER OF UNITS	[illegible]NIT [illegible]ICE	TOTAL TO BE DEPRECIATED	DEPRECIATION COST	
							CLAIMED TO DATE	NEXT SERVICE PD

FIGURE 23d

VEHICLE OPERATION

	OLD	NEW
1. FUEL		
a. Miles per day vehicle is used for this service		
b. Days used per year		
c. Total miles per year for this service		
d. Miles per gallon		
e. Gallons per year for this service		
f. Average cost per gallon	$________	$________
g. Yearly cost for this service	$________	$________
2. MAINTENANCE AND LUBRICATION		
a. Yearly cost	$	$
b. Percent utilized for this service	________ %	________ %
c. Yearly cost for this service	$________	$________
3. REGISTRATION AND INSURANCE		
a. Yearly cost	$	$
b. Percent utilized for this service	________ %	________ %
c. Yearly cost for this service	$________	$________
4. TOTAL VEHICLE OPERATION COST (Total Lines 1g, 2c, and 3c)	$	$

The conclusive method for figuring workers' hourly wages needed to complete a contract is contained only in the experience gained on a given site and in the cumulative experience of several years. Wages that are entered into the formula are based upon established prevailing wages. Government contracts usually will specify the amount of wages to be paid. Wages paid to co-op workers or trainees are based on the established prevailing wage and calculated upon actual productivity rates determined by the grounds maintenance program (see Chapter 9). The work co-op, therefore, is obligated to pay the amount of wages allocated in the contract. Thus, if three full-time standard salaries are calculated, the workshop is to employ six workers at 50 percent wages/productivity, or an equivalent that accounts for the three full-time salaries.

The term "burden costs" applies to several categories and although the term is unique to the nonprofit rehabilitation center, many of its items are not. Burden costs are indirect costs and wages of the supervisor or foreman, the fringe costs for both supervisory personnel and workers/trainees, equipment depreciation, and vehicle operation. "Other burden" should include an allowance factor of 10 to 15 percent for redoing contract work, replacing damaged plants, etc. — this is a real cost factor, not a profit factor. Also added within "other burden" may be a portion of overhead costs.

Expendable Supply Cost

+

Direct Labor Cost = Subcontract Cost

+

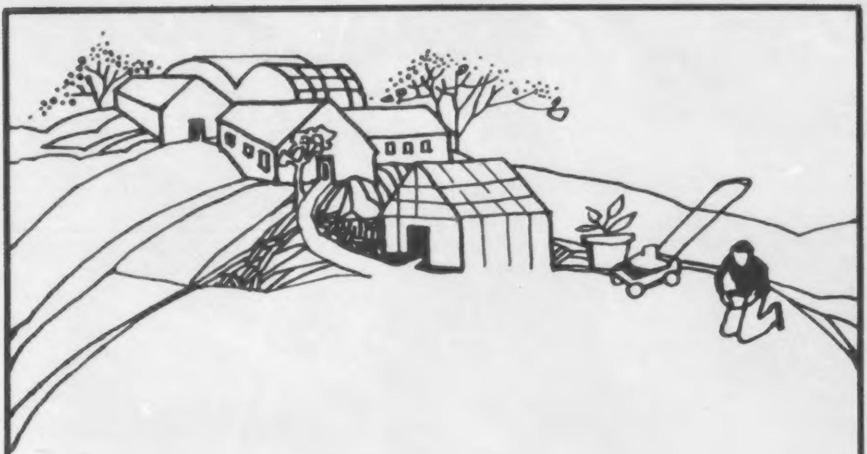
Total Burden Cost

This total subcontract cost is the workshop's bidding cost unless the contract has been brokered by NISH. In the latter case, the subcontract cost is divided by .96 (for NISH commission rate) and the resultant sum is the total contract cost. This, then, is the base price of the bid submitted.

Contract bids should be researched and figured carefully. Too high a bid might mean losing a lucrative contract; a too-low bid could lock the center into a deficit producing situation. Contracts are legally binding and should be very detailed for the protection of both parties and to avoid misunderstandings. All contracts should have a 30-day termination clause applying to both contractor and contractee. See Appendix for sample grounds maintenance contract.

Bonds

It is customary for a bidder to be required to post a bid bond, usually amounting to a small percentage of the total contract price. After the contract has been awarded, a performance bond of perhaps 10 percent of the contract price may be required. The availability of bond funds should be ascertained before entering into the bidding process. Bonds usually can be obtained from the center's bank or insurance broker. Bond monies are returned after the bid or contract has been satisfactorily completed.



PART III

THE MELWOOD EXAMPLE

Chapter Twenty-four

THE MELWOOD EXAMPLE

To present the Melwood example is to run the risk of setting up this program as an ideal model. Such is not the intention. Rather, in describing the Melwood experience it is hoped that other planners might examine the various components that have gone into the development of this rehabilitation (prevocational and vocational training and work co-op, based on a business model) program and highlight for themselves areas that may be relevant for their purposes. It also will become clear that, as in this project, many programs can begin with a pinch of resources and programming and grow to larger dimensions.

Mission

Melwood was conceived and founded by the Prince George's County Association for Retarded Citizens (PGARC) as a place "where people and plants grow." The planners primarily envisioned a productive work setting that would be economically and behaviorally successful with mentally retarded adults. The training program was to teach work responsibility first, the development of productivity levels next, and, where possible, the acquisition of technical job skills. Horticulture was seen as the vehicle for training and for attaining sheltered and competitive employment and independent living. Later, residential services were included in Melwood's programs. The real world of work was and remains the setting for carrying out the organization's mission as formalized in the Articles of Incorporation:

> The object of the corporation is to organize and operate a nonprofit organization for the purposes of providing services and facilities for evaluation, training and employment of and residential services for mentally retarded and mentally handicapped persons to enable them to perform useful and remunerative work . . . .

With the implementation of training and co-op work through a business, the Melwood trainee experiences self-earned income, the pride of accomplishment, enhanced self-esteem, and a full participation as a citizen in the normal life of an adult. For Melwood, it is this service to the mentally retarded trainee that is primary; the business operation is seen as the main vehicle by which this mission is accomplished.

Historical Development

Several of the six parents who founded Melwood were horticultural specialists who worked at the University of Maryland's Agricultural Research Center. In 1963, their joint efforts through PGARC resulted in the acquisition of 6.5 acres of government surplus land near Upper Marlboro, Maryland. The miniscule program began with the first trainees clearing the land. In 1964, the first building, a 24' × 50' greenhouse, was erected, and one staff member oversaw the six to eight male trainees. The program was supported by a budget of a mere $18,000.

Through the next five years, community groups, especially Lions Clubs, contributed building supplies, money, and their own physical labor to construct a washroom and locker area and an addition which served as a storage room and maintenance shop. Grant monies from the Division of Vocational Rehabilitation and HEW Hill-Burton funds enabled the erection of the administration building. A growing conviction in the validity of the business-oriented phiosophy led to the hiring of the first professional horticultural administrative staff in 1966. In 1968, self-incorporation established the Melwood Horticultural Training Center, Inc. as an entity independent from the PGARC. Incorporation facilitated further capitalization efforts and put the organization on a tax-exempt, not-for-profit business basis. By the end of the 1960s, Melwood was operating on a fiscal budget of $106,000. Self-earned income was approximately 39 percent of the budget with the remainder coming from participation in United Way and Division of Vocational Rehabilitation and Mental Retardation Administration allocations for day programming and training.

Expansion — The Melwood Horticultural Center

The next half decade brought rapid growth. An HEW Research and Development grant spanning three years made possible the integration of female trainees and proved the value of Melwood serving both men and women. The Prince George's County Board of Education, in 1971, donated four surplus temporary buildings which housed the counseling services and finance department and provided room to teach daily living skills and food preparation. Next, with monies from the Division of Vocational Rehabilitation and community donations, several more greenhouses were erected, adding wholesale plant production capability; and the purchase of lawn care equipment enabled the performance of large-scale grounds maintenance contracts. The first greenhouse was converted into a retail plant shop which added marketing capacity, and additional retail sales outlets were established in public and private office buildings. Wholesale contracts for plant production further increased Melwood's self-earned income.

Today, the Melwood Horticultural Center serves some 80 trainees through training and work programs in greenhouse growing and grounds maintenance. It also has developed related programs in woodshop and ceramic pottery products and has an independent daily living unit which functions around a small commercial food service program. This facility also supports a community residential program comprised of a group home for eight individuals and an apartment program serving another four residents.

Melwood Greenways — Work Co-op

After some nine years of experience in training, Melwood had placed numerous trainees into competitive employment in horticultural and nonhorticultural jobs. There were still others who were working at their optimum ability but who, for various reasons, were not yet capable of working in the open job market without extensive experience. Out of these circumstances arose the concept of a work co-op with an identity and a location separate from the training facility near Upper Marlboro. County property located in a planned industrial park was obtained, and a grounds maintenance work co-op, known as Melwood Greenways, was established with equipment storage space and repair facilities. Plans for a horticulturally-related wood crafts store, antiques shop, and a plant and garden center with a small greenhouse attached were conceived as outlets for other work. However, the retailing opportunities which fit in with Melwood's long-range plans for business and employment of the handicapped have not yet been realized.

The grounds maintenance work co-op expanded successfully and has become substantially self-supporting. Serving as a trainee's graduate opportunity, Greenways operates as a fully competitive commercial lawn care service. The 36 mentally retarded male and female adults employed here work with a full range of commercial equipment. Wages paid are no less than 50 percent of the minimum prevailing wage and may even surpass the minimum wage, depending upon the individual's job productivity. One full-time staff member supervises the operation of 20 Greenways contracts, more than half of which are 12-month work sites. And one staff member is constantly preparing individuals for competitive employment through teaching job application skills and locating placements.

Melwood Farm — Unique Development

Several years' experience in providing vocational training made clear the need for a residential environment. An alternative was needed to poor home situations or institutionalization. But residential services were lacking in the community, a lack which was detrimental to the development of a substantial segment — approximately one-fourth — of the trainees.

A search for available property in the larger Washington exurban area turned up farm property in Charles County, Maryland. Since trainees already were being bused to the Center from Charles County, a sometimes 40-mile one-way trip, additional credence was given to this location. The farm afforded land for a conceptualized residential village plus room for expansion of the horticultural training operation. In addition, since rural Charles County offered few job opportunities, the farm could offer further co-op work.

The initial planning design for the Melwood Farm encompassed five goals:

1. day vocational training program
2. work co-op
3. resident village

4. year-round camp facility
5. a learning center where visitors could study the Melwood horticultural program concepts.

A $15,000 loan was obtained from a local foundation to purchase the 108-acre farm with a 20' × 100' glass greenhouse, farm house, barn, considerable cleared land, some forested area and a pond. Operations were begun in 1971 with six trainees. Shortly thereafter, a Small Business Administration loan funded construction of a large fiberglass greenhouse complex which added 18,000 square feet of space. The greenhouse training and work activities programs have been the primary developments at this location, although more recently the Farm has secured major contracts for outdoor maintenance with home builders and federal and county properties.

The Charles County Jaycees have provided the major labor resource that created a camp site on the Farm's forested area. The Camp program is composed of three elements: Farm, community, and Outward Bound-type programming. Today, the Melwood Farm Camp consists of a dining hall, three cabins, double bath house, confidence course, and nature trail serving a capacity of 38 campers and staff in a year-round program. The recreationally-oriented Melwood Farm Camp holds five 10-day and four 7-day summer sessions with one quarter of each year's 250 camp tuitions paid with donations from small businesses and private contributors. Family camping, retreats, and staff in-service sessions are held throughout the year.

The Farm's learning center concept is active though limited through small contingents of students and program planners who reside at the Camp or on the Farm Grounds for up to a week at a time. The residential village plan has been mostly redirected into community-based programming with six independent homes and apartments in the community serving 18 residents. A highly staffed transitional quadraplex is being planned for construction on the Farm property.

The General Picture

Melwood Horticultural Training Center, Inc. now encompasses three locations in two adjacent counties in southern Maryland. The Melwood Horticultural Center, the Melwood Greenways Co-op, and three residential facilities, all located in Prince George's County, are headed by a single director. The Melwood Farm and six residences in Charles County are headed by their own director. An Executive Director has overseen the total corporate effort since 1966. In business effort, Greenways solely operates a commercial lawn care service. The Farm and the Horticultural Center provide greenhouse facilities totaling 27,000 square feet, both conduct training programs in grounds maintenance, and both provide a range of other vocational and supportive services. The Prince George's Center houses corporate administrative and finance personnel.

Melwood daily serves 200 persons, of whom 164 are trainees and 36 are co-op workers. The co-op workers and trainees will earn salaries of $250,000 in 1980 and receive fringe benefits such as sick and vacation leave. In the past four years Melwood has placed 95 graduates into competitive and co-op employment.

In the 1980 fiscal year, plant production from the combined locations and income of the grounds maintenance crews amounts to 39 percent of Melwood's overall budget. Perhaps of greater meaning is the percentage (104%) of self-earned income to expenses in the Greenways Work Co-op program. The bulk of the remaining corporate income comes from fees and grants from local government, the Maryland Division of Vocational Rehabilitation and Mental Retardation Administration, CETA programs, United Way, and other sources. This budget includes the expenses for the supervision and operation of nine homes and apartments for 30 individuals and the provision of evaluation and supportive services for all the trainees.

Administration

Board of Directors

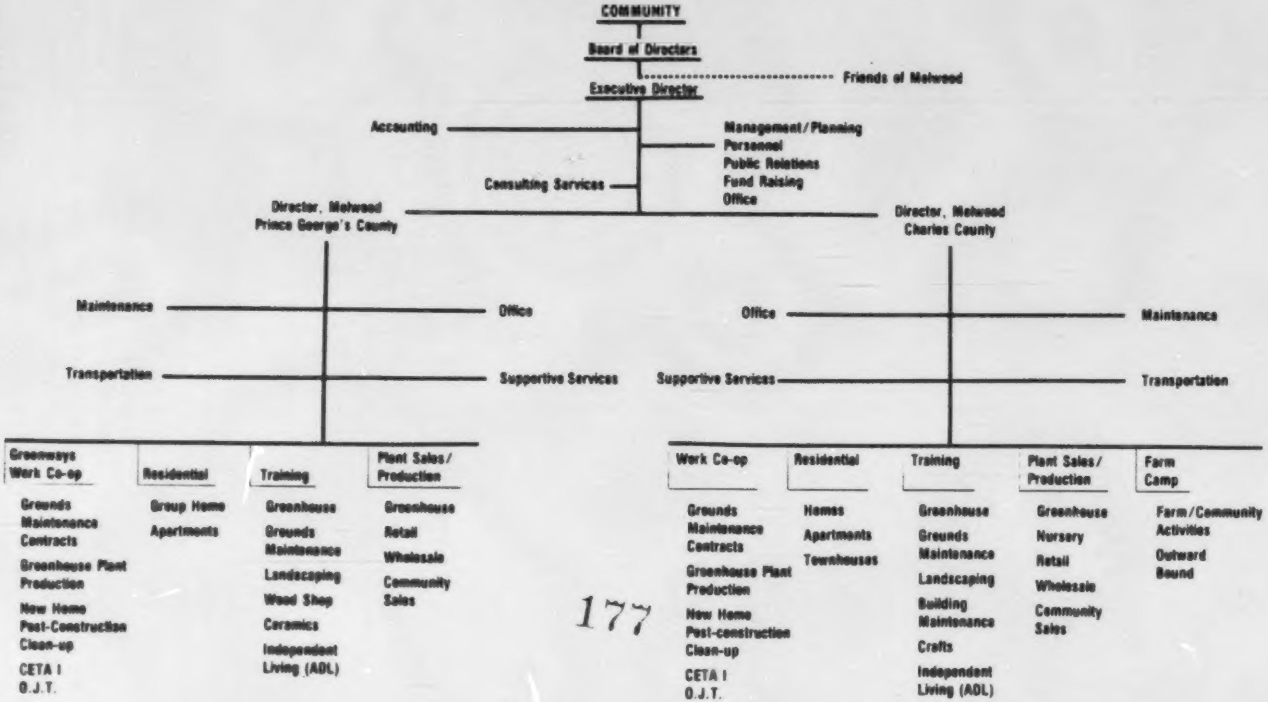
Melwood's chief administering body is its 15-member Board of Directors who take an active role in the organization's direction. Composition of Board membership is balanced among representative of horticultural, business, banking, health, social services, legal, educational, and parental groups. With their professional affiliations and experience, the Board members offer important technical knowledge and guidance. Moreover, in their "supportive" and "check and balance" capacities, they are organized into four working committees (finance, business, residential/training, personnel/board membership). Board members challenge the staff to maintain fidelity to the Melwood mission.

Key Staff

An organization chart (Figure 24) provides an overview of functional departments at Melwood structured by county. Some key horticultural positions that Melwood employs among the staff are mentioned here only with titles since they have been described earlier. Of utmost importance is the position of Training Coordinator through which all trainees (not including Greenways co-op workers) are programmed and supervised for work training activities. Thus, ultimate training goals have a built-in protection from becoming lost at the expense of production demands. A Greenhouse Manager-Grower is employed at each county facility as is a marketing Sales Specialist. Grounds maintenance service demands a Contract Field Supervisor and an Administration Manager. In recent years, through increased recruitment of graduates of university horticultural therapy/rehabilitation programs, Melwood has employed as Crew Instructors for the greenhouse and grounds maintenance crews, individuals who have both human development and horticultural knowledge and experience. This affords both behavioral and vocational development of trainees and ensures fulfillment of technical horticultural work at the most professional level.

FIGURE 24

FUNCTIONAL FLOW CHART
Melwood Horticultural Training Center, Inc.


COMMUNITY
Board of Directors
Friends of Melwood
Executive Director
Accounting
Management/Planning
Personnel
Public Relations
Fund Raising
Office
Consulting Services
Director, Melwood Prince George's County
Director, Melwood Charles County
Maintenance
Office
Transportation
Supportive Services
Office
Maintenance
Supportive Services
Transportation
Greenways Work Co-op
Grounds Maintenance Contracts
Greenhouse Plant Production
New Home Post-Construction Clean-up
CETA I O.J.T.
Residential
Group Home
Apartments
Training
Greenhouse
Grounds Maintenance
Landscaping
Wood Shop
Ceramics
Independent Living (ADL)
Plant Sales/Production
Greenhouse
Retail
Wholesale
Community Sales
Work Co-op
Grounds Maintenance Contracts
Greenhouse Plant Production
New Home Post-construction Clean-up
CETA I O.J.T.
Residential
Homes
Apartments
Townhouses
Training
Greenhouse
Grounds Maintenance
Landscaping
Building Maintenance
Crafts
Independent Living (ADL)
Plant Sales/Production
Greenhouse
Nursery
Retail
Wholesale
Community Sales
Farm Camp
Farm/Community Activities
Outward Bound

Management Information Systems

Melwood employs various management information systems which provide aid in decision making throughout the organization. Basically for Melwood, management information systems consist of any information which reaches the attention of managers and enables them to develop effective and cost efficient programs. Once the pieces of information become standardized and begin flowing in an expected time frame, then this flow is formally recognized as a Management Information System (MIS). These systems include departmental short- and long-range planning and budgeting, program evaluation, IPP's, shipping and inventory records, production and contract quality control records, and weekly sales reports.

For example, as used by Melwood, program evaluation is a goal-oriented, time management procedure measuring actual accomplishments against expectations. Variances are highlighted and addressed with corrective actions. Every department develops and is responsible for a set of goals and a time schedule for their completion. These are reviewed monthly and quarterly by the respective directors. Program evaluation as a methodology applies to training, to sales, and to administration itself, as well as to plant production and grounds maintenance services.

Training

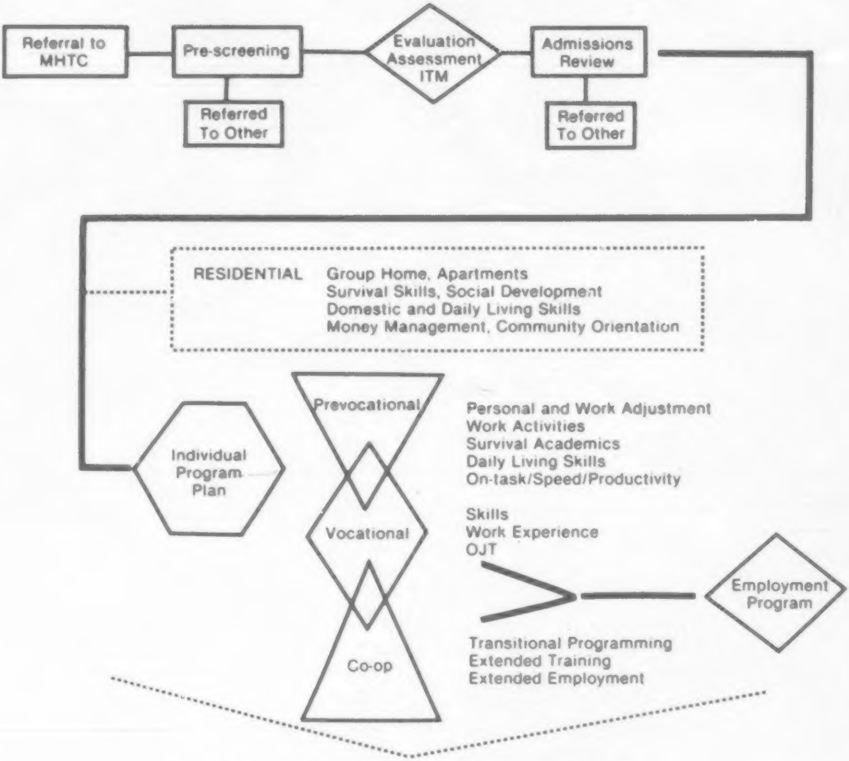
The primary goal of Melwood's training program is employment. In keeping with that goal, real job settings afford experience with real tools of the trade, real job pressures and demands (efficiency, deadlines), and the real atmosphere of work (appropriate clothes, lunch boxes, specified coffee breaks).

Training plans for each trainee are established by the interdisciplinary team and implemented through the IPP. Instructors employ established time trial procedures to determine efficiency and to set pay rates. The Melwood instructor must strike a balance between being "foreman" and "instructor." The latter role is given administrative sanction and support through the role of the training coordinator who oversees these systems. Furthermore, in-service time is provided throughout the year to improve the instructors' capabilities. Without a clear and firm philosophy of training and constant acknowledgement of this philosophy, training would be highly subject to the forces of instructor turn-over, administrative or production demands, and fiscal needs.

A flow chart (Figure 25) shows an overview of the process a trainee will follow from admission to job placement at Melwood. Applicants are generally 18 to 35 years of age and are admitted in conjunction with the Mental Retardation Administration or Division of Vocational Rehabilitation, since in Maryland these offices have primary responsibility for prevocational and vocational preparation for handicapped individuals. A primary diagnosis of mental retardation is given priority, although secondary diagnoses including emotional disturbance and physical disabilities are not infrequent. The entrance evaluation process takes place over a minimum of six weeks and includes a range of work experiences on various crews and several standardized tests and scales such as:

FIGURE 25

CONTINUUM
OF
VOCATIONAL DEVELOPMENT


Referral to MHTC
Pre-screening
Referred To Other
Evaluation Assessment ITM
Admissions Review
Referred To Other
RESIDENTIAL
Group Home, Apartments
Survival Skills, Social Development
Domestic and Daily Living Skills
Money Management, Community Orientation
Individual Program Plan
Prevocational
Vocational
Co-op
Personal and Work Adjustment
Work Activities
Survival Academics
Daily Living Skills
On-task/Speed/Productivity
Skills
Work Experience
OJT
Employment Program
Transitional Programming
Extended Training
Extended Employment

QUARTERLY PROGRAM REVIEW
CLIENT - STAFF - OTHER INPUT

Melwood Prevocational Evaluation Form (work adjustment)

American Association of Mental Disability's Adaptive Behavior Scale (activities of daily living)

Residential Rating Form (independent living skills)

Recording of personal history (family, school, court, etc.)

Social/Recreational Checklist (independent and group social/recreational activities)

An evaluation conference with the applicant, his or her parents, the counselor, and Melwood personnel explores long-range expectations for the trainee.

The training process is arranged according to a developmental framework in which prevocational programming develops general work habits, vocational training emphasizes productivity and specific skills, and the trainee graduates to co-op work or competitive employment. The heart of developmental programming is the use of real work situations as the activities which trainees perform while the skills or competencies that must be developed are ordered hierarchically, from most general to most specific.

Two of the content areas of training — work adjustment and occupational skills — make up the prevocational and vocational curricula respectively. In addition, independent living teaches skills and knowledge which prepare individuals to survive as much as possible on their own. An Activities of Daily Living (ADL) curriculum covers nine life functioning areas: citizenship, communication, home and family, leisure time, materials and money, social adjustment, physical and mental health, safety, and travel. Similarly, the social/recreational functioning area addresses the demands for peer compatibility and a well-rounded development so the trainee/employee does not stand out as a deviant individual in a job or community situation. See Figure 26. A job placement in the community in competitive employment is made when the trainee has demonstrated a criterion of competence in employability and displays the motivation to retain that employment outside the Melwood system.

Additional Services

Other Program Services supplement the independent living and social/recreational areas of training. Speech therapy and language development is a service Melwood only recently has undertaken. Recreational and social programs include Special Olympics, night school classes, holiday celebrations, and outings that may range from local visits to week-long camping trips or vacations to the beach. Counseling and referral is available to all trainees and covers such things as family planning referrals, medical assistance, and personal problem counseling. Since Melwood has developed its own housing units, residential placement has been an additional facet of services available to trainees. Just as work training is developmentally presented, the residential units are organized on a continuum of care basis from the closely supervised group home to the less structured and minimally supervised apartments and homes.

FIGURE 26

MELWOOD TRAINING SUMMARY

CONTENT	PROCESS	ASSESSMENT
WORK ADJUSTMENT Areas of Functioning as Employable Worker	On the job training	Melwood Prevocational Evaluation Form
OCCUPATIONAL SKILLS Grounds Maintenance Skills Greenhouse Work Skills	On the job training	Time Trials for Skill Accuracy and Productivity
INDEPENDENT LIVING Survival Skills Personal Adjustment Residential Living	ADL Program, Evening Recreational Programs, Individual Contracting thru IPPs.	Activities of Daily Living Rating Adaptive Behavior Scale of AAMD Financial Stability
SOCIAL/RECREATIONAL FUNCTIONING Peer Socialization Residential Living	ADL Program, Evening Recreational Programs, Residential Program, Individual Contracting thru IPPs.	Activities of Daily Living Rating Individual Needs

Plant Production

Of Melwood's total plant production, approximately 50 to 60 percent are seasonal crops such as poinsettias, chrysanthemums, bedding plants and spring baskets. The remaining 40 to 50 percent of production is concentrated in year-round foliage or tropical varieties that provide a staple product for plant sales, mainly such standards as wandering jew, swedish ivy, ferns, and dracena. The Farm complex propagates nearly all of its seasonal foliage varieties. Only a small percentage of products, usually 10-inch Schefflera and other 6-inch tropical foliage, are brought in for finishing off. At the Center, about 50 percent of products are propagated from cuttings and the remainder, especially poinsettias, are finished off products.

Plant Sales

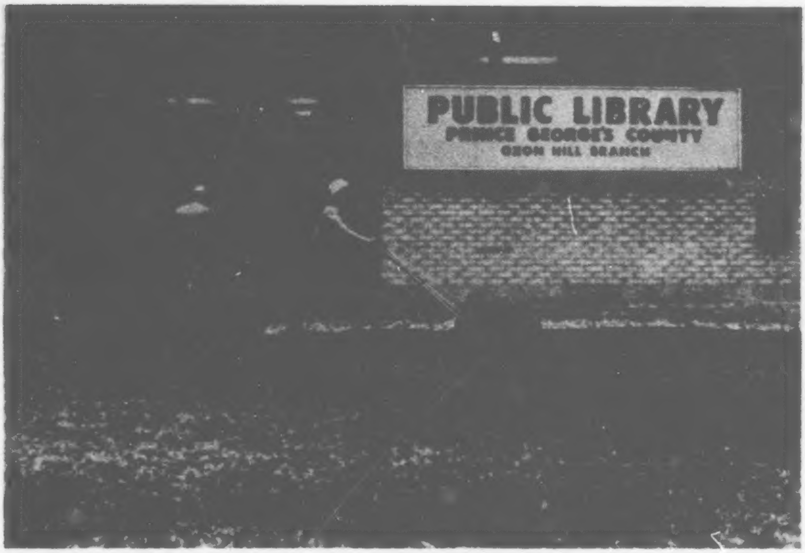
Sales at both the Melwood Horticultural Center and at the Melwood Farm are categorized as retail, wholesale, and community sales (i.e., building sales). The Center operates its glass greenhouse as a retail shop from Tuesday through Sunday on a seasonal basis. Although the Farm has no shop as such, it also sells plants out of its greenhouse to retail customers. Wholesale income at both locations derives from delivery routes to chain stores and small plant stores or nurseries who then retail the goods in the community. Melwood now is experimenting with contract growing for broker sales. Melwood's forte in sales has been its effort in "building sales." Between the Center and the Farm, Melwood conducts sales in 85 to 90 buildings per year in the metropolitan area. At holiday periods (Christmas, Mother's Day, and Easter) a concentrated effort is made to conduct sales at all locations. By far, this technique has been Melwood's sales backbone and has produced Melwood's identity in a large part of this urban community. An average building sale will gross $500 to $800; however, $1,000 to $2,000 sale days are common.

Grounds Maintenance and Grounds Management

In the second decade of Melwood's expansion, grounds maintenance has rapidly established a firm place as a training model, an employment opportunity, and an income source for the organization. Whereas the Farm's contracts in grounds maintenance are more generally manual labor-oriented, Melwood Greenways Work Co-op has a substantial investment in machinery and an equivalent expansion of work and contracting expertise. Beginning from such small contracts as the public library or a nearby nursing home, Greenways now holds lawn mowing contracts for a large veterans cemetary, RFK Stadium, eight county libraries, and other large federal and public grounds.

Contracting

Melwood's contracts in grounds maintenance originally resulted from an aggressive pursuit of opportunities. The majority of its contracts (both in number and in total dollars) still rests with competitively bid procurements.



Grounds maintenance contract being performed for local public library.

Since the passage of the Javits-Wagner-O'Day Act of 1973, Melwood is aggressively attempting to move all its federal contracts under NISH since this mechanism offers stability from year to year and eliminates annual competitive bidding. In contacting local industry or government offices, the contracting specialist takes a frank business approach that "we have a service — you have a need" and enters into the professional bidding process with other commercial companies. Management of contracts in this area is becoming increasingly more specialized. Under a DVR grant a professional market analysis by a business consultant is refining Melwood's marketing ability. By strengthening the Greenways facility with a full-time administrative "developer-manager," Melwood anticipates that this unit will continue to experience rapid growth. The long-range goal is for this facility to employ 100 co-op workers with an annual payroll of over $500,000.

For publicizing its grounds maintenance service, Melwood relies upon a minimum of general advertising. A $1200 Yellow Pages ad represents the largest advertising outlay. A Melwood Greenways advertising brochure (see Figure 27) is mailed to increasing numbers of potential contractors with requests to be placed on their bidders lists. Melwood Greenways workers wear standardized uniforms and their trucks carry an emblem proclaiming "Melwood Greenways Commercial Lawn Service." Melwood also sponsors exhibitions in local flower and garden shows and at professional conventions. At the forefront of these efforts is the emphasis placed upon quality of service and competitive rates.

FIGURE 27

Melwood

GREENWAYS

OFFERING:

- turf management
- shrub and tree maintenance
- flower bed management
- landscape design, planning and implementation

OUR SERVICES PROVIDE:

- a professional staff with trained horticulturists
- reliability
- skilled and experienced workers

OUR CURRENT CONTRACTS INCLUDE:

Prince George's County Public Libraries
U. S. Secret Service
National Lutheran Home
FAA
Washington Gas Light Company
Constitution Gardens
RFK Stadium

Greenways is a facility of
Melwood Horticultural Training Center, Inc.
5606 Dower House Road
Upper Marlboro, Maryland 20870
(301) 599-8000

The Business Environment

This section can hardly be concluded without summarizing the impact upon Melwood's trainees and co-op workers of operating as a fully-functioning commercial business. The greenhouse operation is as vulnerable to hardships of nature as is any other similar business. Equipment failure in the greenhouse or with grounds maintenance machinery may incur costly delays or, even worse, a reduction of product quality or efficiency. But in the face of these demands, the staff have developed a daily accountability that does not wait for quarterly or semi-annual reviews. This press for accountability has been found to increase the trainee's development of responsibility to meet the challenge of the real world. A temperament that is realistic and organization minded is passed on to the trainees and elicits from them an earnestness on the job. Operating as a business creates in Melwood's administrators and staff a decisiveness and an effectiveness that filters through to trainees and inculcates the qualities of being responsible and productive. This, ultimately, is the main product of Melwood's Horticultural Training Center: Melwood graduates and co-op workers who are work responsible and work productive and who are valued members of our work society.

Future Development Plans

Continuing development planned for Melwood in the coming years includes fulfillment of some long-standing goals plus the realization of other opportunities.

The three-year growth plan for Melwood Greenways already has been mentioned. The plan, which calls for employment of 100 sheltered workers and a $500,000 payroll supported by matching growth in grounds and added janitorial contracts, is in response to the pressing need for additional opportunities for co-op work. The Greenways plan also incorporated facility expansion to allow for proper training and office space, equipment maintenance and shelter, and storage to support the expanded program.

Another business development plan involves a garden center from which Melwood would sell its plant, wood, and ceramics products plus a full line of garden supplies. This expansion of Melwood's business outlets also would afford a place of employment for co-op workers plus an opportunity for trainees to gain further community exposure, experience, and reinforcement of training objectives.

An exciting potential is contained in the planned development of an exchange program between Melwood and other programs in the United States and around the world. Exchange of staff would benefit all involved agencies as knowledge is exchanged and experience broadened. But the program also would include exchange of trainees who could gain new experience and growth. Enthusiastic responses have come from Germany, England, Israel, Jamaica — programs in every country with which discussions have been held.

For many years, Melwood has acted as a resource for persons and agencies interested in obtaining information on a Melwood-type horticultural rehabilitation program. The volume of visitors from this country and abroad has made clear the need for a developed educational capability in which

Melwood's annual Officials Day luncheon and awards presentation provides an opportunity to thank community business, civic, and government leaders for their support, to set forth plans for the coming year, and to highlight the capabilities and accomplishments of trainees and co-op workers.

Melwood would act as a consultant on varying levels of involvement, depending on the depth of existing knowledge and expressed need of those requesting counsulting services. Not only would Melwood's services be available at the Center and the Farm locations, but Melwood staff would conduct workshops and seminars at other community, educational, and agency sites.

One of Melwood's long-held dreams is a ranch or wilderness camp facility — an extension of the Melwood Farm Camp which will serve as a resource for staff, trainees, and co-op workers. The advantages of a different environment — "getting away from it all" — is a recognized and accepted value for everyone. Melwood feels strongly about the need for persons to meet challenges and to stretch themselves physically, mentally, and emotionally as they become well-rounded, self-confident individuals. Melwood's training program has always included field trips for trainees and staff who go camping in the mountains or at the shore or travel to Disney World and even to Bermuda. Such trips and their new experiences and challenges add a dimension to a person's development which carries over into their more normal, everyday routine. Melwood believes that every person should be encouraged in that development. Providing opportunites for growth in an enjoyable atmosphere can only be an asset to the total training and rehabilitation program.

This description of Melwood — what it has been, what it is, what it will be — portrays one program which answered a need, dealt with specific realities, and maintained a vision. It is not unique in that respect. The principles and operational details described in this manual can be put to work in any situation as fits particular needs. It is an established fact that rehabilitation through horticulture *does* work and can be adapted to serve varying needs in varying situations. Not without problems and continuing struggles, Melwood has used the horticultural environment, developed programs to answer needs, maintained enthusiasm, searched for innovation, and planned for the future, while never losing sight of its original mission. If that is a unique record, then Melwood is unique — but it is a uniqueness which can be claimed by any program that wishes to take advantage of the many benefits offered by the horticultural environment.

BIBLIOGRAPHY

Beck, Terry-Diane and Alexis Gersumky. *The Foundation Center Source Book.* New York: Columbia University Press. 1975/76.

Berninger, Louis. *Profitable Garden Center Management.* Reston, Virginia: Reston Publishing Company, Inc. 1978.

Bordsky, Jean, Senior Editor. *Taft Corporate Foundation Directory.* Washington: Taft Corporation. 1977.

Catalog of Federal Domestic Assistance. Washington: Office of Management and Budget. 1980.

"A Comprehensive View of Horticulture and the Blind." *HortTherapy.* Mount Vernon, Virginia: National Council for Therapy and Rehabilitation through Horticulture, Vol. I, No. 1. March, 1979.

Coorsh, Richard P., Gale D. Snoddy, and Paula D. Relf. *Funding Sources for Horticultural Therapy Programs.* Mount Vernon, Virginia: National Council for Therapy and Rehabilitation through Horticulture. No Date.

Copus, Earl, Jr. "Defining Therapy and Rehabilitation through Horticulture." Address given at the Seventh Annual Conference in Chicago. National Council for Therapy and Rehabilitation through Horticulture. 1979.

Cummings, Wm. Joseph, III, Editor. *A Study of Horticultural Therapy in Fairfax County, Virginia.* Mount Vernon, Virginia: National Council for Therapy and Rehabilitation through Horticulture. 1978.

Dermer, Joseph, Editor. *How to Get Your Fair Share of Foundation Grants.* New York: Public Service Materials Center. 1973.

Dermer, Joseph, Editor. *Where America's Large Foundations Make Their Grants.* New York: Public Service Materials Center. 1971.

Foundation Grants Index. New York: Columbia University Press. No Date.

Gold, Marc W. *Try Another Way.* Sacramento: The California Project. 1977. (An excellent basic work on task analysis of work skill training for the severely handicapped. Available from The California Project, 1455 Response Road, Suite 138, Sacramento, California 95815)

"The Grantsmanship Center News." Los Angeles: The Grantsmanship Center. (published six times per year by The Grantsmanship Center, 1031 South Grand Avenue, Los Angeles, California, 90015)

Grimmer, W. W. *Greenhouse Cost Accounting.* Kenosha, Wisconsin: Gateway Technical Institute. 1975.

Hillman, Howard and Karin Abarbanel. *The Art of Winning Foundation Grants.* New York: The Vanguard Press, Inc. 1975.

Krone, Paul R. *Starting and Managing a Retail Flower Shop.* Washington: Small Business Administration. 1970.

Lewis, Charles A. "The Evolution of Horticultural Therapy in the United States." Talk presented at the Fourth Annual Conference in Philadelphia, National Council for Therapy and Rehabilitation through Horticulture. 1976.

Lewis, Marianne O., Editor. *The Foundation Directory,* Edition 7. New York: Columbia University Press. 1979.

Mastalerz, John W. *The Greenhouse Environment.* New York: John Wiley and Sons. 1977.

Metcalf, Wendell O. *Starting and Managing a Small Business of Your Own.* Washington: Small Business Administration. 1973.

Morris, John D. "A Vocationally Oriented Skill Training Program for the Mentally Retarded Using Task Analysis." Master's Thesis.

Nelson, Paul V. *Greenhouse Operation and Management.* Reston, Virginia: Reston Publishing Company, Inc. 1978.

Olson, Adele Peele. "The Development and Implementation of an Evaluated Study of the Effect of Horticultural Therapy on Certain Physically Disabled Patients." Clemson University, South Carolina: The South Carolina Agricultural Experiment Station. 1976.

Program Evaluation: A First Step. Chicago: Commission on Accreditation of Rehabilitation Facilities. 1976.

Relf, Paula D. and Wm. Joseph Cummings, III. *An Annotated Bibliography of Horticultural Therapy.* Mt. Vernon, Virginia: National Council for Therapy and Rehabilitation through Horticulture. 1978.

Relf, Paula Diane. "Horticulture in a Semi-Self-Supporting Training Center for Mentally Retarded Adults." Doctoral Dissertation. 1976.

Richman, Charles S. *Federal Grants and Financial Assistance for Rehabilitation Facilities: The Funding Resource Finder.* Washington: National Association of Rehabilitation Facilities. 1977.

The Role of the Sheltered Workshop in the Rehabilitation of the Severely Handicapped. New York: Greenleigh Associates, Inc. 1975.

Steinfeld, Edward, Project Director. *Selected Bibliography on Barrier-Free Design.* Syracuse University. 1979. (Prepared for U.S. Department of Housing and Urban Development, Office of Policy Development and Research. Lists 126 basic references. For sale by the Supt. of Documents, U.S. Government Printing Office.)

So . . . You Serve on a Board. 1978. (May be ordered from Voluntary Action Center of San Gabriel Valley, P.O. Box 5282, Pasadena, California 91107. $1.50.)

"The Wheelabout Garden." (Leaflet describes award-winning exhibit at annual New England Flower Show. May be ordered from The National Easter Seal Society for Crippled Children and Adults, 2023 West Ogden Avenue, Chicago, Illinois 60612, or from NCTRH.)

Thoday, P. R., Editor. "Horticulture for the Hanidcapped" (Seminar Proceedings). University of Bath, England: The Spastics Society, 1979. (Distributed by The Spastics Society, Thorngrove House, Gillingham, Dorset.)

Thoday, P. R. "Therapy Through Horticulture." University of Bath, England: British Association for the Advancement of Science. 1978.

White, A. S., Editor. *Easy Path to Gardening.* London: The Readers' Digest Association in conjunction with the Disabled Living Foundation. 1972.

Appendix 1

STAFF IN-SERVICE TRAINING OPPORTUNITIES

1. Conferences and workshops put on by
   The National Council for Therapy and Rehabilitation through Horticulture
   Mount Vernon, Virginia 22121
2. The annual Ohio State Growers Short Course, Columbus, Ohio
3. Seminars at local universities
4. Workshops put on by local nonprofit groups serving the handicapped
5. Conferences and workshops put on by professional organizations and associations. See Appendix 10.

SAMPLE JOB DESCRIPTIONS
OF
KEY PERSONNEL

JOB DESCRIPTION
TRAINING SUPERVISOR

Under the supervision of the chief executive, the Training Supervisor is responsible for the effective and efficient operation of all aspects of the training program in coordination with the director of program services.

Responsibilities include:

- Supervise all training department staff: hiring, in-service training, evaluations, assistance as needed.
- Curriculum development, training procedures: trainee rotation; developmental planning; evaluation; training in skills, job responsibilities, academics, social and recreational activities; IPPs.
- Set up and conduct work productivity time trials; establish trainee salaries according to appropriate guidelines.
- Establish training department budget; operate within budget guidelines.
- Maintain liaison with parents of trainees.
- Conduct weekly departmental staff meetings.
- Provide crisis intervention with trainees as needed.
- Be able to drive vehicles: van, crew cab.
- Ensure that consistent high quality is maintained throughout training program.
- Represent organization at professional training and education meetings; keep informed of new trends and developments within the profession.
- Maintain ongoing personal and professional growth.
- Serve as member of chief executive's management staff.

JOB DESCRIPTION
GREENHOUSE PRODUCTION MANAGER

Under the supervision of the chief executive and in coordination with the plant marketing/sales specialist, the Greenhouse Production Manager is responsible for the total production of plants in greenhouse training and production areas.

Responsibilities include:

- Coordination with marketing specialist in planning crop production.
- Purchase all stock in necessary stages of development according to plan.
- Maintain crop production schedules as established.
- Maintain quality control; control all insect and disease problems.
- Ensure that all greenhouses are maintained in clean, safe condition.
- Maintain all necessary cultural requirements of plant materials.
- Maintain continuous inventory of all plants and materials.
- Supervise greenhouse aide(s), greenhouse co-op workers, and greenhouse trainees during production work.
- Represent organization at industry and trade meetings; keep informed of new trends and developments within the industry.
- Establish greenhouse production budget; maintain budget guidelines.
- Serve as member of center director's management staff.
- Maintain ongoing personal and professional growth.

JOB DESCRIPTION
PLANT MARKETING/SALES SPECIALIST

Under the supervision of the chief executive and in coordination with the greenhouse production manager, the Plant Marketing/Sales Specialist is responsible for the successful operation of the wholesale and retail plant business.

Responsibilities include:

- Plan sales program in coordination with greenhouse production manager.
- Successfully market all plants and materials produced by the horticultural center.
- Implement an effective advertising program.
- Keep complete records of all sales; provide necessary billing information to accounting department.
- Hire and supervise sales and delivery personnel; supervise and assist trainees when part of sales force.
- Establish marketing/sales departmental budget; operate within budget guidelines.
- Represent organization at industry and trade meetings; keep informed of new trends and developments within the industry.
- Serve as member of center director's management staff.
- Maintain ongoing personal and professional growth.

JOB DESCRIPTION
GROUNDS CONTRACT MARKETING SPECIALIST

Under the supervision of the chief executive, the Grounds Contract Marketing Specialist obtains grounds maintenance and landscaping contracts appropriate to the training and co-op work force and of sufficient income to meet self-earned income goals.

Responsibilities include:

- Assist in setting self-earned income goals as appropriate for trainee and/or co-op work force.
- Seek out and negotiate appropriate contracts for grounds maintenance and landscaping work; be knowledgeable of bidding process for various types of contracts; make concerted effort to obtain contracts offering work for 12 months of the year.
- Be knowledgeable of capabilities of grounds workers and equipment.
- Implement effective advertising program for grounds services and to maximize community exposure.
- Keep complete records of contracts, bid and performance bonds, etc., and provide necessary billing information to accounting department.
- Establish grounds contract marketing budget; operate within budget guidelines.
- Ensure that all contract work is performed satisfactorily; implement evaluation procedures for work performed.
- Hire and supervise contract marketing staff.
- Serve as member of center director's management staff.
- Represent organization at industry and trade meetings; keep informed of new trends and developments within the industry.
- Maintain ongoing personal and professional growth.

JOB DESCRIPTION
GREENHOUSE/GROUNDS CREW INSTRUCTOR

Under the supervision of the training supervisor, the Crew Instructor is responsible for the academic, social, recreational, and vocational training of a crew of handicapped persons.

Responsibilities include:

- Implement individual prescriptive plan for each trainee.
- Provide vocational training in all aspects of greenhouse/grounds maintenance skills.
- Make periodic evaluation of each trainee regarding development of skills, behaviors, and attitude.

- Attend weekly meeting of training department staff.
- Maintain parent contact; schedule parent conferences when necessary.
- Maintain cleanliness of work area; enforce safety regulations.
- Drive vehicles as necessary: van, crew cab.
- Be responsible for authorized purchase orders for needed supplies.
- Maintain ongoing program of personal and professional growth.

JOB DESCRIPTION
GREENHOUSE/GROUNDS CREW FOREMAN

Under the supervision of the work co-op supervisor, the Crew Foreman provides supervision and work leadership for greenhouse and/or grounds maintenance workers.

Responsibilities include:

- Provide crew supervision necessary to carry out greenhouse production schedule/grounds maintenance contracts; render guidance through active working leadership; ensure that growing schedules/contracts are completed.
- Maintain safety procedures as set forth in guidelines for all equipment and work areas; periodically inspect first aid kit and fire extinguisher.
- Properly maintain and operate equipment and vehicles; maintain cleanliness of equipment and vehicles; notify maintenance person of needed repairs.
- Properly store equipment and vehicles at end of working day.
- Record attendance of crew members.
- Supervise worker time trials; perform periodic evaluations; make work performance evaluation reports.
- Meet with job placement specialist in consultation on workers' competitive job readiness.
- Attend staff meetings.
- Maintain ongoing personal and professional growth.

JOB DESCRIPTION
GREENHOUSE AND EQUIPMENT MAINTENANCE PERSON

The Maintenance Person should be able to render the necessary all-around maintenance required by the horticultural center. Under the supervision of the chief executive or his designee, the responsibilities include:

195

- Maintain and repair all buildings using skills in carpentry, electronics, plumbing, etc., as necessary.
- Maintain and repair all equipment in greenhouses and/or work co-op, including greenhouse temperature control systems, grounds equipment, and accompanying structures such as greenhouse benches.
- Maintain and repair vehicles, excluding major repairs; keep appropriate maintenance records.
- Estimate costs and procure parts and materials necessary for repair and maintenance of buildings, equipment, and vehicles.
- Participate in the remodeling of existing buildings and construction of new projects: oversee layout and plans, estimating, materials procurement, implementation of project. Initiate outside contracts for large plumbing, electrical, and heating projects.
- Supervise delivery and dispensing of gasoline and oil supplies.

Appendix 3

SOURCES FOR STAFF RECRUITMENT

1. NCTRH Job Bank
   c/o H. T. Research Project
   Burt Hall, Room 120
   Kansas State University
   Manhattan, Kansas 66506
   (913) 532-5944

   On the 15th and 30th of each month, an updated statement of all available jobs will be mailed to any individual or institution requesting the listing. The charge for each job listing is $1.00.

2. University departments of horticulture, psychology, special education, and others whose graduates would have the necessary training. Also, the career placement offices of these universities. See Appendix 4.
3. Career Planning and Placement Services
   Stout Vocational Rehabilitation Institute
   School of Education
   University of Wisconsin-Stout
   Menomonie, Wisconsin 54751
4. The local chapter of applicable professional associations. See Appendix 10.
5. The periodical of the National Association of Rehabilitation Facilities
   5530 Wisconsin Avenue, Suite 955
   Washington, D.C. 20015
   (301) 654-5882
6. Job listings in trade magazines. See Appendix 10.
7. Internship programs in universities offering training in horticultural therapy. See Appendix 4.

197

Appendix 4

UNIVERSITIES IN THE UNITED STATES THAT CURRENTLY HAVE HORTICULTURAL THERAPY PROGRAMS

COMPILED BY THE

National Council for Therapy and Rehabilitation through Horticulture

Universities that offer a degree in Horticultural Therapy

Kansas State University
Dept. of Horticulture
Manhattan, KS 66502
Attn: Dr. Richard H. Mattson

Universities that offer an option within a degree in Horticultural Therapy

Clemson University
Dept. of Horticulture
Clemson, SC 29631
Attn: Dr. T. L. Senn

University of Georgia
Dept. of Horticulture
Athens, GA 30601

University of Maryland
Dept. of Horticulture
College Park, MD 20742

University of Massachusetts
Dept. of Horticulture
Amherst, MA 01002

Michigan State University
Institute of Agricultural Technology
Dept. of Horticulture
East Lansing, MI 48823

Ohio State University
Dept. of Horticulture
Wooster, OH 44691

Texas Tech University
Dept. of Plant and Soil Science
Lubbock, TX 79409
Attn: Dr. George Tereshkovich

Virginia Polytechnic Institute
& State University
Dept. of Horticulture
Blacksburg, VA 24060
Attn: Dr. Diane Relf
(Under development)

Two year programs

Charles County Community College
Mitchell Road
Box 910
La Plata, MD 20646

Meramec Community College
11333 Big Bend Boulevard
St. Louis, MO 63122

Appendix 5

SAMPLE TIME STUDIES
FOR
BASIC GREENHOUSE SKILLS

BASIC HORTICULTURE

A-1 Fill pots with soil and fill flat with pots

Conditions

1. Soil premixed and at potting bench
2. 20 pots at bench (3" square)
3. Flat at bench (plastic - holding 20 pots)
4. 95% accuracy — any less redone with time added
5. Trowel optional

Process

1. Pick up pot
2. Fill with soil (trowel optional)
3. Shake off excess (¼" below top of pot)
4. Place in flat
5. Repeat 20 times

Measure

Norm time: 83 sec. for 20 or 4.2 sec/pot
Prevailing Wage: $4.18/hr. Commensurate: % of $4.18
Norm Subjects:

Name:
Position:
Address:

Name:
Position:
Address:

Name:
Position:
Address:

BASIC HORTICULTURE

A-2 Moving Potted Plants

Conditions

1. Flat at bench
2. Trainee knows variety asked for and location
3. Flat is filled (and will hold only 20 pots)

Process

1. Receive directions - plant variety and location
2. Take flat to plants
3. Fill flat with potted plants
4. Bring flat back to bench

Measure

Norm time: 89 sec. per 20 or 4.5 sec./pot
Prevailing Wage: $4.18/hr. Commensurate: % of $4.18
Norm Subjects:

Name:
Position:
Address:

Name:
Position:
Address:

Name:
Position:
Address:

BASIC HORTICULTURE

A-3 Potting Tips

Conditions/Materials

1. Flat containing 20 3" pots filled with soil
2. Several plants with obviously numerous tips (i.e., Wandering Jew) in 10" hanging basket (H.B.) at any specified area.

Process

1. Select tip from plant and pinch it about 1 1/2" down

2. Hold tip in the middle and place in pot stem down until the soil is at least 1/4" above the first node.
3. Repeat this process 2 additional times per 3" pot (total of 3 tips per 3" pot)

Measure

Norm time: 386 seconds per 20 or 19.3 sec./pot
Prevailing Wage: $4.18/hr. Commensurate: % of $4.18
Norm Subjects:

Name:
Position:
Address:

Name:
Position:
Address:

Name:
Position:
Address:

BASIC HORTICULTURE

A-4 Repotting 3" — 4" tips

Conditions

1. Empty pots at bench (4")
2. Plants at bench (3" potted plants)
3. Premixed soil at bench
4. Handtrowel optional

Process

1. Put small amount of soil in bottom of 4" pot
2. Tap 3" pot on the bench and gently pull out the plant
3. Place the plant into the center of the 4" pot
4. Hold up the bottom leaves of the plant and fill the gaps around the plant
5. Brush off excess soil
6. Pinch long tips and place around the edges of the pot.

Measure

Norm time: 780 seconds per 20 pots or 39 sec/pot
Prevailing Wage: $4.18/hr. Commensurate: % of $4.18
Norm Subjects:

Name:
Position:
Address:

Name:
Position:
Address:

Name:
Position:
Address:

BASIC HORTICULTURE

A-5 Repotting to 5" baskets with tips

Conditions

1. Empty 5" hanging basket (H.B.) with hangers at the potting bench
2. 3" plants at bench
3. Premixed soil at bench
4. Handtrowel optional

Process

1. Fill 5" H.B. 1/4 of the way up with soil
2. Tap 2 3" plants lightly on bench and remove gently from pot
3. Place plants side by side into 5" H.B.
4. Lift leaves and fill in the two gaps with soil to 1/4" below top of H.B.
5. Pinch off long tips and stick in bare spots
6. Put hangers on the baskets
7. Hang finished basket around bench

Measure

Norm time: 625 sec/10 baskets or 63 sec/basket
Prevailing Wage: $4.18/hr. Commensurate: % of $4.18
Norm Subjects:

Name:
Position:
Address:

Name:
Position:
Address:

Name:
Position:
Address:

BASIC HORTICULTURE

A-6 Repot 8" Baskets with Tips (arranging)

Conditions

1. Empty 8" H.B. at bench with hangers
2. 3" plants at bench
3. Premixed soil at bench
4. Handtrowel optional

Process

1. Fill 8" H.B. 1/2 way up with soil
2. Tap 4 3" pots against the bench to loosen and gently pull from the pots
3. Arrange the 4 plants around the H.B.
4. Fill in the gaps around the plants with soil being careful not to bury the leaves of the plants
5. Brush off excess soil
6. Pinch long tips and place them in bare spots
7. Put hangers on the baskets
8. Hang around bench

Measure

Norm time: 458 seconds/5 baskets or 92 seconds/basket
Prevailing Wage: $4.18/hr. Commensurate: % of $4.18
Norm Subjects:

Name:
Position:
Address:

Name:
Position:
Address:

Name:
Position:
Address:

BASIC HORTICULTURE

Determination of Prevailing Wage

Company "X"	3/20/80	$4.50 — $5.50	Avg. $5.00
Company "Y"	3/11/80	$3.35	
Avg. prevailing wage:	$4.18/hr.		

PREVAILING WAGE DOCUMENTATION

This is to certify the prevailing wages paid to Greenhouse Laborers with the following range of experience:

0 — 1 year $3.10/hour
2 — 5 years $3.35/hour
6 — 10 years $3.90/hour

COMPANY: Company "X"
address
address

Signed ________________
Title ________________
Date ________________

PREVAILING WAGE DOCUMENTATION

This is to certify the prevailing wages paid to Greenhouse Laborers with the following range of experience:

0 — 1 year $3.50/hour
2 — 5 years $4.50 — 5.50/hour
6 — 10 years $ __________ /hour

COMPANY: Company "Y"
address
address

Signed ________________
Title ________________
Date ________________

Appendix 6

MELWOOD
PREVOCATIONAL EVALUATION FORM

The Melwood Prevocational Evaluation Form is composed of five parts.

1. The Evaluation Form indicates points of strengths and weaknesses during evaluation.
2. The points of failure are recorded on the Priority Behavioral List which lists the behaviors to be worked on.
3. The IPP is the plan for working on each individual behavior.
4. The Contract, signed by both trainee and instructor, is a business-like agreement which makes clear the goal to be reached and the reward which provides additional incentive.
5. The Behavior Graph charts the daily performance of the trainee and shows when the specific IPP goal has been reached.

MELWOOD PREVOCATIONAL EVALUATION FORM

TRAINEE: ______________________________

DATES: ______________________________

INSTRUCTOR: ______________________________

DIRECTIONS:

Each question is to be marked either yes, no or not applicable, based on direct observation of the trainee in an actual work setting. A positive answer represents *at least three* successful demonstrations of that behavior. A negative answer represents *one or more* unsuccessful demonstrations of that behavior. An answer of "not applicable" means that the behavior was unable to be observed with this particular trainee.

RESULTS:

TOTAL POINTS: __________; __________; __________; __________;
(initial) (6 months) (1 year) (18 months)
__________; __________; __________
(2 years) (30 months) (3 years)

DAY CARE	SHELTERED	BORDERLINE	COMPETITIVE EMPLOYMENT
0-260	261-415	416-467	468-520

MELWOOD PREVOCATIONAL EVALUATION FORM

Yes	No	N/A			
				1 Absenteeism (x 3.1)	
(✓)	( )	( )	1-A	Did the trainee attend all or all but one day this month. (9)	9
(✓)	( )	( )	1-B	Did the trainee call the bus driver early or notify the office the day before the absence. (6)	6
(✓)	( )	( )	1-C	Did the trainee give a justifiable reason for his/her absence; e.g., illness, appointment, etc. (6)	6
(✓)	( )	( )	1-D	Was the trainee either late at the bus stop or late arriving at Melwood Farm more than once. (3)	3
				Subtotal	24
				2 Communication decoding (x 1)	
(✓)	( )	( )	2-A	Did the trainee complete a one task verbal direction. (6)	6
(✓)	( )	( )	2-B	Did the trainee complete a two task verbal direction. (6)	6
( )	(✗)	( )	2-C	Did the trainee complete a three task verbal direction. (6)	-
( )	(✗)	( )	2-D	Did the trainee complete a four task verbal direction. (6)	-
( )	(✗)	( )	2-E	Did the trainee complete a one task written direction. (3)	-
( )	(✗)	( )	2-F	Did the trainee complete a two task written direction. (3)	-
( )	(✗)	( )	2-G	Did the trainee complete a three task written direction. (3)	-
( )	(✗)	( )	2-H	Did the trainee complete a four task written direction. (3)	-
( )	(✗)	( )	2-I	Can the trainee model a singular motion activity — 5 demo. (9)	-
( )	(✗)	( )	2-J	Can the trainee model a two motion activity. (9)	-
(✓)	( )	( )	2-K	Can the trainee model a three motion activity. (9)	9
( )	(✗)	( )	2-L	Can the trainee model a four motion activity. (9)	-
( )	(✗)	( )	2-M	Can the trainee read all the information signs around the Farm. (3)	-
				Subtotal	21

MELWOOD PREVOCATIONAL EVALUATION FORM

Yes	No	N/A			
				3 Communication encoding (x 6.8)	
(✓)	( )	( )	3-A	Can the trainee relate the description of a one task activity which he has performed (½ day later). (1)	1
(✓)	( )	( )	3-B	Can the trainee relate the description of a two task activity which he has performed. (1)	1
(✓)	( )	( )	3-C	Can the trainee relate the description of a three task activity which he has performed. (1)	1
(✓)	( )	( )	3-D	Can the trainee relate the description of a four task activity which he has performed. (1)	1
(✓)	( )	( )	3-E	Can the trainee communicate so that he can be understood. (3)	3
(✓)	( )	( )	3-F	Is there any manner in which the trainee communicates that is annoying or distracting. (3)	–
(✓)	( )	( )	3-G	Does the trainee respond in yes and no answers. (1)	1
				Subtotal	8
				4 Motivation (x 2.9)	
( )	(x)	( )	4-A	Did the trainee come directly to instructor and ask for a new assignment after he/she complete initial work. (6)	–
( )	(x)	( )	4-B	Did the trainee agree to work an additional ten minutes into a break period. (2)	–
( )	(x)	( )	4-C	Did the trainee ask if he/she was doing the task correctly. (4)	–
( )	(x)	( )	4-D	Does the trainee move in the direction of the assignment immediately after it is given. (6)	–
( )	(x)	( )	4-E	Does the trainee refrain from making gestures, looks or words which indicate his displeasure with the assignment. (6)	–
( )	(x)	( )	4-F	Did the trainee volunteer to do a difficult job. (2)	–
				Subtotal	0
				5 Initiative (x 12.3)	
( )	(x)	( )	5-A	Did the trainee begin another task without being told upon finishing his first assignment. (3)	–
( )	(x)	( )	5-B	Did the trainee suggest a job which needed to be done when assignments were given out. (1)	–
(✓)	( )	( )	5-C	Does the trainee begin a routine morning assignment without being told to begin. (2)	2
				Subtotal	2

MELWOOD PREVOCATIONAL EVALUATION FORM

Yes	No	N/A			
				6 Impulsiveness (x 3.8)	
( )	(X)	( )	6-A	Did the trainee begin a task before complete directions were given. (6)	6
( )	(X)	( )	6-B	Does the trainee ask about the occurrence of some event or his participation in it more than once. (4)	4
(✓)	( )	( )	6-C	Does the trainee initiate an unwarranted activity without prior direction. (6)	-
(✓)	( )	( )	6-D	Does the trainee react in any way other than asking for assistance in a difficult job. (4)	4
				Subtotal	14
				7 Judgment (x 6.2)	
( )	(X)	( )	7-A	Can the trainee make a decision when at least two options are presented on the job. (4)	-
( )	(X)	( )	7-B	Can the trainee make correct judgments about an aspect of his assignment: e.g., which tool to use, sufficient water in a pot. (4)	-
( )	(X)	( )	7-C	Does the trainee organize a three or more step assignment. (4)	-
				Subtotal	0
				8 Need for Supervision (x 2)	
(✓)	( )	( )	8-A	Will the trainee stay in the assigned area for the duration of the task without supervisor present. (9)	9
(✓)	( )	( )	8-B	Will the trainee stay working at the assigned task while the supervisor is not present. (9)	9
(✓)	( )	( )	8-C	Does the trainee ask to go to an area other than the assigned one. (3)	3
( )	(X)	( )	8-D	Does the trainee go directly to and from the assigned errand. (9)	-
( )	(X)	( )	8-E	Does the trainee react in a negative way to presence of supervisor (stop work, become nervous, question presence). (6)	6
( )	(X)	( )	8-F	Does the trainee ask for assistance once he/she has demonstrated success in doing task. (3)	3
				Subtotal	30

MELWOOD PREVOCATIONAL EVALUATION FORM

9 Punctuality (x 1.6)

Yes	No	N/A			
( )	(✗)	( )	9-A	Is the trainee on time for the crew muster. (9)	–
(✓)	( )	( )	9-B	Is the trainee on time after lunch. (9)	9
(✓)	( )	( )	9-C	Is the trainee on time after break period. (9)	9
(✓)	( )	( )	9-D	Is the trainee back from a special break within the given time period. (6)	6
(✓)	( )	( )	9-E	Does the trainee return from the restroom within five minutes. (6)	6
( )	(✗)	( )	9-F	Does the trainee move directly to the task after directions are given. (9)	–
				Subtotal	30

10 Pressure Tolerance (x 3.6)

(✓)	( )	( )	10-A	Does the trainee make any gestures, words or looks that indicate displeasure when given criticism. (9)	–
( )	(✗)	( )	10-B	Does the trainee attempt to follow the directive from the criticism. (6)	–
( )	(✗)	( )	10-C	Can the trainee follow through with a series of directions (five or more) and completion of tasks without showing reticence or refusal to continue working. (6)	–
				Subtotal	0

11 Durability (x 1.7)

( )	(✗)	( )	11-A	Can the trainee work at a job at 80% proudction rate for a complete day. (9)	–
( )	(✗)	( )	11-B	Can the trainee work at a job at 80% production rate for a complete week. (9)	–
(✓)	( )	( )	11-C	Can the trainee stay at an assigned task for at least one-half day's duration. (9)	9
( )	(✗)	( )	11-D	Is the trainee's production rate within 5% points from morning to afternoon. (6)	–
(✓)	( )	( )	11-E	Does the trainee refuse to do or complain when placed in a physically demanding work area. (6)	–
(✓)	( )	( )	11-F	Does the trainee show signs of fatigue during the day. (6)	–
				Subtotal	9

MELWOOD PREVOCATIONAL EVALUATION FORM

Yes	No	N/A		
			12 Travel (x 6.2)	
(✓)	( )	( )	12-A Can the trainee find his way to a particular location on the Farm. (3)	3
(✓)	( )	( )	12-B Can the trainee walk in between the benches without injuring himself. (3)	3
(✓)	( )	( )	12-C Can the trainee get on and off a truck, tractor, stool, etc. (2)	2
( )	(×)	( )	12-D Can the trainee go to and from a location within a certain time period. (3)	–
( )	(×)	( )	12-E Does the trainee have any noticeable physical disability in walking. (1)	1
			Subtotal	9
			13 Emotional Stability (x 1.4)	
(✓)	( )	( )	13-A Does the trainee talk to himself. (6)	–
( )	(×)	( )	13-B Does the trainee carry his head in a distracting way. (6)	6
( )	(×)	( )	13-C Does the trainee rock, twirl his fingers, fling his arms or exhibit any other bodily movement which is distracting or annoying. (6)	6
(✓)	( )	( )	13-D Does the trainee make any distracting facial expressions, whether in conversation or observed from a distance. (6)	–
(✓)	( )	( )	13-E Does the trainee complain about illnessess, self-inadequacies. (6)	–
(✓)	( )	( )	13-F Does the trainee look at the person he is addressing. (6)	6
(✓)	( )	( )	13-G Does the trainee show extreme concern for cleanliness. (6)	6
( )	(×)	( )	13-H Does the trainee tell stories which are not true. (6)	6
(✓)	( )	( )	13-I Does the trainee stare into space for a period of one minute or more in solitary work set. (6)	–
			Subtotal	30
			14 Quality (x 3.1)	
( )	(×)	( )	14-A Can the trainee perform an assigned task with specified standards 90% — 60% — 30% or less of the time. (9)	–
( )	(×)	( )	14-B Can the trainee pick out all work, either his own or his peers, which does not meet quality standards. (9)	–
(✓)	( )	( )	14-C Did the trainee improve quality with repetition (one week later on same task). (6)	6
			Subtotal	6

MELWOOD PREVOCATIONAL EVALUATION FORM

Yes	No	N/A			
				15 Productivity (x 1.7)	
( )	(×)	( )	15-A	Can the trainee work at 80% or better, 60% or better, 30% or better of the instructor's work output in a cooperative setting. (9)	–
( )	(×)	( )	15-B	Can the trainee work at 80% or better, 60% or better, 30% or better of the instructor's work output in a solitary work setting. (9)	–
( )	(×)	( )	15-C	Can the trainee work at 80% or better, 60% or better, 30% or better of the instructor's work output in a parallel work setting. (9)	–
( )	(×)	( )	15-D	Did the trainee improve his speed with repetition (one week later on same task). (6)	–
( )	(×)	( )	15-E	Did the trainee work within 5% the productivity rate measured on a job he liked versus one he does not like. (3)	–
(✓)	( )	( )	15-F	Does the trainee have any non-productive behavior that interferes with consistency of his work (10 minute observation). (9)	–
				Subtotal	0
				16 Integrity (x 5)	
(✓)	( )	( )	16-A	Can the trainee handle others' money without stealing. (9)	9
( )	(×)	( )	16-B	Does the trainee report truthfully about the work he has done. (6)	–
				Subtotal	9
				17 Physical Appearance (x 2.9)	
( )	(×)	( )	17-A	Does the trainee have a body odor. (4)	4
( )	(×)	( )	17-B	Does the trainee have noticeable bad breath. (4)	4
( )	(×)	( )	17-C	Is the trainee dirty in the morning (hands, hair, fingernails, face, teeth). (4)	4
(✓)	( )	( )	17-D	Are the trainee's clothes in good repair. (4)	4
(✓)	( )	( )	17-E	Do the trainee's clothes fit the weather conditions. (2)	2
(✓)	( )	( )	17-F	Are the trainee's clothes clean. (4)	4
(✓)	( )	( )	17-G	Does the trainee wear his clothes properly: shoes tied, shirt in, pants buckled, etc. (4)	4
				Subtotal	26

MELWOOD PREVOCATIONAL EVALUATION FORM

Yes	No	N/A		
			18 Regard for Equipment (x 3.8)	
( )	(X)	( )	18-A Does the trainee replace the equipment in its assigned place at the end of the work day. (6)	–
( )	(X)	( )	18-B Does the trainee use the tool in the way he/she is directed to. (4)	–
( )	(X)	( )	18-C Does the trainee clean up his/her work area at the end of the work day. (6)	–
( )	(X)	( )	18-D Does the trainee set his equipment aside while working so that it is not easily damaged or lost. (4)	–
			Subtotal	0
			19 Social Acceptability (x 4.7)	
(✓)	( )	( )	19-A Does the trainee carry on a conversation with his peer when working side by side. (2)	2
(✓)	( )	( )	19-B Does the trainee talk and/or sit with another trainee at lunch. (2)	2
(✓)	( )	( )	19-C Can the trainee work in a cooperative work setting without arguing, etc. (3)	3
(✓)	( )	( )	19-D Does the trainee carry on any conversation with a member of the opposite sex in a parallel/cooperative work setting. (2)	2
(✓)	( )	( )	19-E Does the trainee give and return greetings. (2)	2
( )	(X)	( )	19-F Has the trainee incited any fights over the evaluation period. (3)	3
(✓)	( )	( )	19-G Does the trainee interrupt conversations. (2)	–
			Subtotal	14
			20 Safety Mindedness (x 2.8)	
( )	(X)	( )	20-A Does the trainee set aside tools so that they are not dangerous. (9)	–
(✓)	( )	( )	20-B Does the trainee engage in any horseplay while around dangerous equipment. (9)	–
( )	(X)	( )	20-C Can the trainee state the possible dangers of certain equipment or situations. (3)	–
(✓)	( )	( )	20-D Does the trainee wear proper safety equipment (shoes, coat, hat). (6)	6
			Subtotal	6

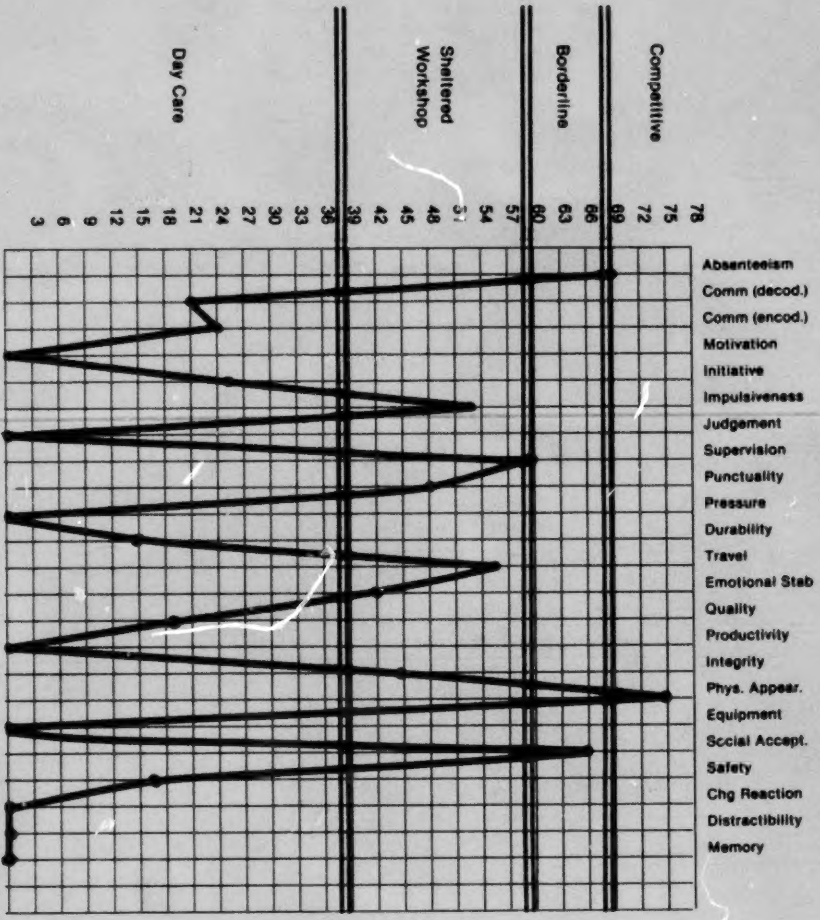
MELWOOD PREVOCATIONAL EVALUATION FORM

Yes	No	N/A		
			21 **Reactions to Change** (x 6.2)	
(✓)	( )	( )	21-A Did the trainee react negatively to at least five job changes during a single day (refusal, slow-down, confusion). (6)	–
(✓)	( )	( )	21-B Did the trainee react negatively to an unpleasant job (refusal, reluctance, complaints, slow-down). (6)	–
			Subtotal	0
			22 **Distractability** (x 3.1)	
( )	(✗)	( )	22-A Does the trainee continue working (productivity 80%) in a high traffic area. (6)	–
( )	(✗)	( )	22-B Does the trainee go directly back to work after being interrupted. (9)	–
( )	(✗)	( )	22-C Does the trainee complete his task before quitting or moving to a new task. (9)	–
			Subtotal	0
			23 **Memory** (x 9.3)	
( )	(✗)	( )	23-A Did the trainee remember to do an assigned task one-half day later. (3)	–
( )	(✗)	( )	23-B Did the trainee recall what tools are needed for a specific job. (2)	–
( )	(✗)	( )	23-C Did the trainee remember the time for an appointment. (3)	–
			Subtotal	0

MELWOOD PREVOCATIONAL PROFILE

TRAINEE: ______________________________

DATES: ________________ TO ________________



PRIORITY BEHAVIORAL LIST
(Long Range Behavioral Plan)

TRAINEE: ______________________________

Sequence Number	O.R.M. Number	Dates Start — Finish	Behavior	Points
	2-C		complete a three task vebal direction	
	2-D		complete a four task verbal direction	
	2-E		complete a one task written direction	
	2-F		complete a two task written direction	
	2-G		complete a three task written direction	
	2-H		complete a four task written direction	
	2-I		model a singular motion activity	
	2-J		model a two motion activity	
	2-L		model a four motion activity	
	2-M		read all the information signs	
	3-F		communicates that is annoying or distracting	
	4-A		ask for a new assignment	
	4-B		work an additional ten minutes	
	4-C		ask if he was doing the task correctly	
	4-D		move in the direction of the assignment immediately	
	4-E		refrain from making gestures, looks, or words with the assignment	
	4-F		volunteer to do a difficult job	
	5-A		begin another task without being told	
	5-B		suggest a job which needed to be done	
	5-C		begin a routine morning assignment	
	6-C		initiate an unwarranted activity	
	7-A		make a decision when at least two options are presented	
	7-B		make correct judgments about an aspect of his assignment	
	7-C		organize a three or more step assignment	
	8-D		go directly to and from the assigned errand	
	9-A		on time for the crew muster	
	9-F		move directly to the task after directions are given	

PRIORITY BEHAVIORAL LIST
(Long Range Behavioral Plan)

TRAINEE: ______________________________

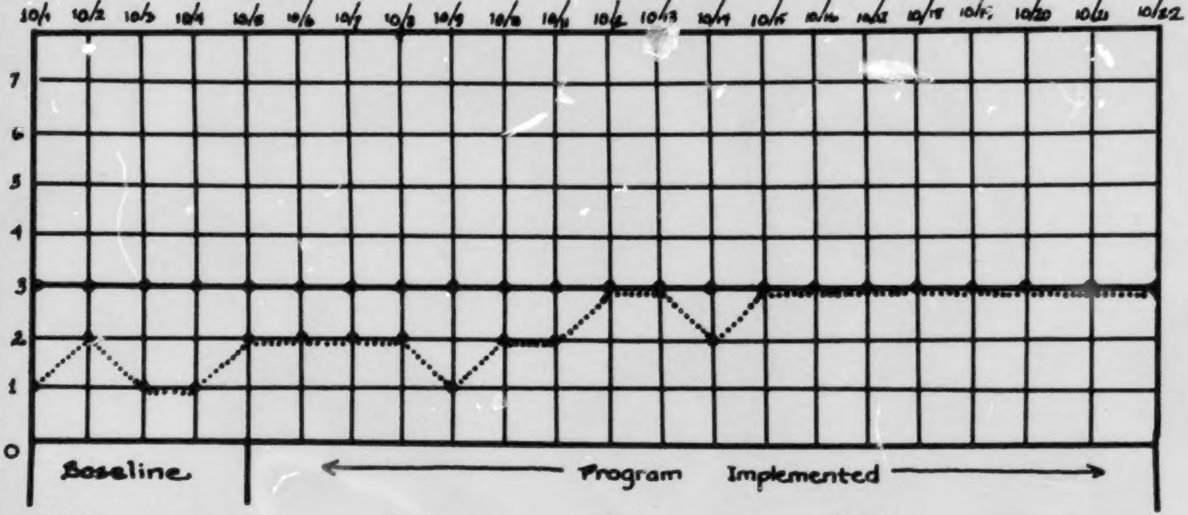
Sequence Number	O.R.M. Number	Dates Start — Finish	Behavior	Points
	10-A		make any gestures, words, or looks that indicate displeasure when given criticism	
	10-B		attempt to follow the directive from the criticism	
	10-C		follow through with a series of directions without showing reticence or refusal	
	11-A		work at a job 80% production rate for a complete day	
	11-B		work at a job 80% production rate for a complete week	
	11-D		production rate within 5% points from morning to afternoon	
	11-E		refuse to do or complain when placed in a physically demanding work area	
	11-F		show signs of fatigue	
	12-D		go to and from a location within a certain time period	
	13-A		talk to himself	
	13-D		make any distracting facial expressions	
	13-E		complain about illnessess, self-inadequacies	
	13-I		stare into space for a period of one minute	
	14-A		perform an assigned task with specified standards 90% of the time	
	14-B		pick out all work which does not meet quality standards	
	15-A		work 80% or better of the instructor's work output in a cooperative setting	
	15-B		work 80% or better of the instructor's work output in a solitary work setting	
	15-C		work 80% or better of the instructor's work output in a parallel work setting	
	15-D		improve his speed with repetition	
	15-E		work within 5% the productivity rate measured on a job he liked versus one he does not like	

PRIORITY BEHAVIORAL LIST
(Long Range Behavioral Plan)

TRAINEE: ______________________________

Sequence Number	O.R.M. Number	Dates Start — Finish	Behavior	Points
	15-F		have any nonproductive behavior	
	16-B		report truthfully about the work he has done	
	18-A		replace the equipment in its assigned place	
	18-B		use tool in the way he is directed	
	18-C		clean up his work area at the end of the work day	
	18-D		set his equipment aside while working so it is not easily damaged or lost	
	19-G		interrupt conversation	
	20-A		set aside tools so they are not dangerous	
	20-B		engage in any horseplay	
	20-C		state the possible dangers of certain equipment	
	21-A		react negatively to at least five job changes	
	21-B		react negatively to an unpleasant job	
	22-A		continue working in a high traffic area	
	22-B		go directly back to work after being interrupted	
	22-C		complete his task before quitting or moving to a new task	
	23-A		remember to do an assigned task one-half day later	
	23-B		recall what tools are needed for a specific job	
	23-C		remember the time for an appointment	

DAILY GRAPHING OF BEHAVIOR PERFORMANCE



Trainee: ____________ Dates: ____________ to ____________ Behavior: ____________

KEY

Trials: Number of trials observed daily.

Baseline: Records the observed behavior performance before training program is initiated. Dark line shows number of trials (behavior performances) observed. Dotted line shows successful completions according to pre-established standards.

Program Implemented: Records number of trials observed (dark line) and number of trials completed (dotted line) after training program has been implemented. Once the two lines become joined for a pre-established period of time, it denotes successful performance.

EXAMPLE
INDIVIDUAL PRESCRIPTIVE PROGRAM

Instructor ______________________________ Date ________________________

Month:

Trainee:

Goal and Goal Number:

11-A — Work at 80% production rate for a complete day.

Procedure:

1 - Instructor will monitor rates of production in pot assemblage, filling, washing, transplating, taking and placing cuttings, soil mixing and preparation, at least three times a day, twice in the morning and once in the afternoon.

2 - Instructor will assign tasks of a comparative nature.

Objectives:

1 - Trainee will perform assigned tasks such as pot washing, filling, assembling, transplating, taking and placing cuttings, soil preparation and mixing, etc. at least three times each day, twice in the morning and once in the afternoon.

2 - Trainee must produce at least 80% of her initial rate (1st in a.m.) later in the morning and in the afternoon. 100% or more constitutes two checks; and less than 80% constitutes an "X".

3 - Fifteen consecutive days of successful achievement of 80% production rate or better for a day.

Reward/Cost Response:

potted plant of choice

Result:

CONTRACT

(I/WE), ______________________________, HEREBY DECLARE

THAT (I/WE) WILL ______________________________

____

THIS JOB WILL BE CONSIDERED SUCCESSFUL ______________________________.

____

____
Trainee

FOR THE SUCCESSFUL COMPLETION OF THE ABOVE JOB YOU MAY ______

____

Date signed ______________

Date completed ______________

____
Instructor

220

Appendix 7

Clinton County Chapter
New York Association for Retarded Citizens

GREENHOUSE TASK ANALYSIS

INDIVIDUAL TRAINING PROGRAM
ARC Horticulture Program
GREENHOUSE

______________________________	______________________________
Client Trainee	Client Number

Training Area: ______________________________

Task: ______________________________

Objective: ______________________________

____

____

____

Teaching Method: ______________________________

____

Materials: ______________________________

____

Teacher: ____________________ **Mastery Criteria:** ____________________

How Data Is To Be Collected: ______________________________

____

____

Date Training Is Begun: ______________________________

Date Completed: ______________________________

When Scheduled: ______________________________

COMMENTS:

Commensurate Wage Rate: ____________________

Horticulture Skills **Task — Watering Benches** **Total no. of sub-steps — 10**

Trainee ______________________

Trainer ______________________

Task Analysis & Data Sheet

Pass A — No Help
Fail 1 — Verbal Help
2 — Demonstration
3 — Physical help
4 — Not completed

	Date: PT	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. fill watering can or pail with water																	
* 2. if fertilizing — fill pail by measuring water in																	
* 3. gallon jar — add 1 tbsp. fertilizer per gallon																	
4. start with first container in first row																	
5. press finger into soil to check for dryness																	
6. if dry, add 1 glassful of water																	
7. repeat until soil is saturated, water drains from bottom																	
8. repeat steps 5, 6, 7 until row is completed																	
9. repeat for each row until job assignment is completed																	
10. return all equipment to original spot																	
11.																	
12.																	
13.																	
14.																	
15.																	
16.																	
17.																	
18.																	
19.																	
20.																	
21.																	
22.																	
23.																	
24.																	
25.																	

* OPTIONAL

Horticulture Skills

Task — Watering Hanging Baskets

Total no. of sub-steps — 11

Trainee ____________________

Trainer ____________________

Task Analysis & Data Sheet

Pass A — No Help
Fail 1 — Verbal Help
2 — Demonstration
3 — Physical help
4 — Not completed

	Date: PT	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. fill watering can or pail with water																	
* 2. if fertilizing — fill pail by measuring water in																	
* 3. gallon jar — add 1 tbsp. fertilizer per gallon																	
4. remove 1st hanging basket from hook																	
5. pour 1 glassful of water into basket at soil level																	
6. wait a few seconds																	
7. tip basket to drain																	
8. if no water comes out from drainage dish/repeat 5, 6, 7																	
9. replace basket on hook																	
10. follow through steps 5-10 for each basket until finished																	
11. return all equipment to original spot																	
12.																	
13.																	
14.																	
15.																	
16.																	
17.																	
18.																	
19.																	
20.																	
21.																	
22.																	
23.																	
24.																	
25.																	

* OPTIONAL

Horticulture Skills **Task — Soil Mixing** **Total no. of sub-steps — 26**

Trainee ______________________

Trainer ______________________

Pass A — No Help

Fail 1 — Verbal Help

2 — Demonstration

3 — Physical help

4 — Not completed

Task Analysis & Data Sheet

	Date: PT	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. pick up shovel/scoop																	
2. open peat moss container																	
3. place measuring bucket next to peat moss container																	
4. fill bucket with peat moss																	
5. empty peat moss into wheel barrel																	
6. repeat steps 1 - 2 - 3 - 4 - 5 with vermiculite																	
7. close peat moss container																	
8. close vermiculite container																	
9. put shovel & measuring bucket down & out of the way																	
10. open lime bag/container																	
11. dip out 2 tablespoons lime																	
12. pour lime into wheelbarrow																	
13. close lime container																	
14. open superphosphate container																	
15. dip out 5 teaspoons superphosphate																	
16. pour superphosphate into wheelbarrow																	
17. close superphosphate container																	
18. open potassium nitrate container																	
19. dip out 1¼ teaspoons potassium nitrate																	
20. close potassium nitrate container																	
21. pick up shovel / put in bottom of soil mixture																	
22. lift soil and dump back into the wheelbarrow																	
23. repeat until soil is well mixed																	
*24. fill measuring bucket with water ½ times																	
25. empty water into wheelbarrow																	
26. repeat steps 21 - 22 - 23																	

* Amount of water depends on "grade" of soil ingredients; peat moss and vermiculite

Horticulture Skills **Task — Sowing Seeds · 2¼" Pots** **Total no. of sub-steps — 11**

Trainee ____________________

Trainer ____________________

Task Analysis & Data Sheet

Pass A — No Help

Fail 1 — Verbal Help

2 — Demonstration

3 — Physical help

4 — Not completed

	Date: PT	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. fill 2¼" pot to rim with soil																	
2. tap pot on table																	
3. pack down lightly with soil firming tool																	
4. make four shallow holes near each corner of the pot																	
5. place one seed in each hole																	
6. cover with peat moss — no more than ¼"																	
7. repeat steps 1 - 6 until flat is filled																	
8. write plant name on label tag																	
9. write initials on label tag																	
10. write date on label tag																	
11. clean work area																	
12.																	
13.																	
14.																	
15.																	
16.																	
17.																	
18.																	
19.																	
20.																	
21.																	
22.																	
23.																	
24.																	
25.																	

Horticulture Skills

Task — Transplanting: Market Packs

Total no. of sub-steps — 15

Trainee ______________________

Trainer ______________________

Pass A — No Help
Fail 1 — Verbal Help
2 — Demonstration
3 — Physical help
4 — Not completed

Task Analysis & Data Sheet

	Date: PT	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. fill market pack with soil to top of rim																	
2. hold market pack in two hands — tap on work surface																	
3. pack soil lightly with soil firming tool																	
4. make two rows — length of market pack																	
5. with finger — make three evenly spaced holes in first row																	
6. remove seedling from flat with fingers																	
7. place seedling in 1st hole — same soil level as in flat																	
8. level out soil around seedling																	
9. gently press soil around seedling — soil in contact with roots																	
10. repeat steps 7 - 8 - 9 until row is completed																	
11. go to second row — repeat steps 6 - 7 - 8 - 9 - 10																	
12. write initials on label tag																	
13. write date on label tag																	
14. write plant name on label tag																	
15. clean work area																	
16.																	
17.																	
18.																	
19.																	
20.																	
21.																	
22.																	
23.																	
24.																	
25.																	

Horticulture Skills **Task — Cutting: Leaf Bud** **Total no. of sub-steps — 11**

Trainee ____________________
Trainer ____________________

Task Analysis & Data Sheet

Pass A — No Help
Fail 1 — Verbal Help
2 — Demonstration
3 — Physical help
4 — Not completed

	Date: PT	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. cut stem so cutting includes: leaf blade, leaf petiole, node																	
2. trim internode to ½ inch from node																	
3. push finger in beginning of first row																	
4. place cutting in soil — node is covered & blade is parallel to soil																	
5. pinch soil around cutting — soil must be in contact with cutting																	
6. repeat steps 1 - 2 - 3 - 4 - 5 until row is filled																	
7. go to next row and repeat 1 - 2 - 3 - 4 - 5 - 6 until flat is filled																	
8. write plant name on label tag																	
9. write initials on label tag																	
10. place label tag in front left corner of flat																	
11. return all unused materials to original assignment station																	
12.																	
13.																	
14.																	
15.																	
16.																	
17.																	
18.																	
19.																	
20.																	
21.																	
22.																	
23.																	
24.																	
25.																	

Horticulture Skills **Task — Sowing Seeds: Market Pack** **Total no. of sub-steps — 14**

Trainee ______________________________

Trainer ______________________________

Pass A — No Help
Fail 1 — Verbal Help
2 — Demonstration
3 — Physical help
4 — Not completed

Task Analysis & Data Sheet

	Date: PT	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. fill market pack with soil to top of rim																	
2. hold market pack in two hands — tap on work surface																	
3. pack soil lightly with soil firming tool																	
4. make two rows — length of market pack																	
5. with finger — make 3 evenly spaced, shallow holes in 1st row																	
6. place two seeds in first hole																	
7. lightly cover seeds with soil (no more than ¼" deep)																	
8. repeat steps 6 & 7 until row is complete																	
9. go to 2nd row, repeat steps 5 - 6 - 7 until row is complete																	
10. cover soil surface with peat moss																	
11. write initials on label tag																	
12. write date on label tag																	
13. write plant name on label tag																	
14. clean work area																	
15.																	
16.																	
17.																	
18.																	
19.																	
20.																	
21.																	
22.																	
23.																	
24.																	
25.																	

Horticulture Skills

Task — Cutting: Leaf Petiole

Total no. of sub-steps — 11

Trainee ______________________

Trainer ______________________

Task Analysis & Data Sheet

Pass A — No Help

Fail 1 — Verbal Help

2 — Demonstration

3 — Physical help

4 — Not completed

	Date: PT	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. trim petiole to length of 1"																	
2. dip end of petiole in rooting hormone																	
3. push finger in beginning of first row																	
4. place cutting in soil so that leaf blade is in contact with soil																	
5. pinch soil around cutting — soil must be in contact with cutting																	
6. repeat steps 1 - 2 - 3 - 4 - 5 until row is filled																	
7. go to next row and repeat 1 - 2 - 3 - 4 - 5 - 6 until flat is full																	
8. write initials on label tag																	
9. write date on label tag																	
10. place label tag in front left corner of flat																	
11. return all unused materials to original assignment station																	
12.																	
13.																	
14.																	
15.																	
16.																	
17.																	
18.																	
19.																	
20.																	
21.																	
22.																	
23.																	
24.																	
25.																	

Horticulture Skills **Task — Preparing Flats** **Total no. of sub-steps — 11**

Trainee ______________________________

Trainer ______________________________

Task Analysis & Data Sheet

Pass A — No Help
Fail 1 — Verbal Help
2 — Demonstration
3 — Physical help
4 — Not completed

	Date: PT	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. get clean wooden box																	
2. place on work bench																	
3. line box with one complete sheet of newspaper																	
4. fill box with soil — 1" space at top																	
5. cover hand-grip holes with cardboard squares																	
6. level soil with tool																	
7. pack soil lightly with soil firming tool																	
8. turn soil firming tool on its side																	
9. press soil with tool — making straight row																	
10. continue until six evenly spaced rows are made																	
11. return all tools to original place																	
12.																	
13.																	
14.																	
15.																	
16.																	
17.																	
18.																	
19.																	
20.																	
21.																	
22.																	
23.																	
24.																	
25.																	

Horticulture Skills **Task — Cutting: Stem Tip/Stem Section** **Total no. of sub-steps — 14**

Trainee ______________________

Trainer ______________________

Task Analysis & Data Sheet

Pass A — No Help

Fail 1 — Verbal Help

2 — Demonstration

3 — Physical help

4 — Not completed

	Date: PT	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. find direction of growth (must not plant upside down)																	
2. count 3 nodes from growing tip																	
3. separate below third node (pinch/cut)																	
4. remove leaves from third node																	
5. dip tip of cutting in rooting hormone																	
6. push finger in beginning of first row																	
7. place cutting in hole — third node must be below soil line																	
8. pinch soil around cutting — soil must be in contact with cutting																	
9. repeat steps 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 until row is filled																	
10. go to next row and repeat steps 1 — 9																	
11. write initials on label tag																	
12. write date on label tag																	
13. place label in front left corner of flat																	
14. return all unused materials to original assignment station																	
15.																	
16.																	
17.																	
18.																	
19.																	
20.																	
21.																	
22.																	
23.																	
24.																	
25.																	

Horticulture Skills **Task — Sowing Seeds: Flats** **Total no. of sub-steps — 9**

Trainee ______________________

Trainer ______________________

Task Analysis & Data Sheet

Pass A — No Help
Fail 1 — Verbal Help
2 — Demonstration
3 — Physical help
4 — Not completed

	Date: PT	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
1. pick up seed/seeds between index finger & thumb																	
2. drop seeds into first row — seeds touching, not on top of each other																	
3. repeat steps 1 & 2 until first row is finished																	
4. repeat steps 1, 2 & 3 until all 5 rows are completed																	
5. cover entire soil surface with peat moss — no more than ¼"																	
6. write initials on label tag																	
7. write plant name on label tag																	
8. write date on label tag																	
9. clean work area																	
10.																	
11.																	
12.																	
13.																	
14.																	
15.																	
16.																	
17.																	
18.																	
19.																	
20.																	
21.																	
22.																	
23.																	
24.																	
25.																	

Appendix 8

MELWOOD
OCCUPATIONAL SEQUENCE LOGS

MELWOOD OCCUPATIONAL SEQUENCE LOG

Trainee: ____________ Crew: GROWING ____ Instructor: ____________

Sequence Number	Objective Number	TEST Dates Scores		Abbreviated Objective	Instructional Dates	
		Pre	Post		Begin	Finish
	I.A.			Take cuttings without clippers — pinch succulent stem at appropriate place between fingernails.		
	I.B.			Make sure buds will not be injured before making cut.		
	I.C.			Bend stem lightly while pinching so stem is not crushed.		
	I.D.			Perform tasks in proper sequence.		
	II.			Same as above, only using clippers — unlock safety catch of clippers.		
	III.A.			Make hanging baskets — locate proper case.		
	III.B.			Cut case open with knife, making cut across either taped end.		
	III.C.			Remove a pot and hangers from case.		
	III.D.			Unwind wire from around hangers.		
	III.E.			Place wires of hanger into holes on pot.		
	III.F.			Push wires through each hole approx. same distance so basket hangs level.		
	III.G.			Bend each wire into pot flat, pointed down.		
	III.H.			Stack pots on clean bench.		
	III.I.			Perform tasks in proper sequence.		
	IV.A.			Disinfect old pots — fill tub with water.		
	IV.B.			Add one cup of clorox or ½ cup of LF-10.		

MELWOOD OCCUPATIONAL SEQUENCE LOG

Trainee: ____________ Crew: GROWING Instructor: ____________

Sequence Number	Objective Number	TEST Dates Scores		Abbreviated Objective	Instructional Dates	
		Pre	Post		Begin	Finish
	IV.C.			Wash pots out by rinsing and brushing dirt out with fingers.		
	IV.D.			Put hanging baskets on clean empty bench; put standard pots, stacked upside down, in clean flats.		
	V.A.			Clean potting benches — sweep old dirt off bench.		
	V.B.			Rinse bench with water.		
	V.C.			Splash clorox on wet bench.		
	V.D.			Scrub clorox over bench lightly with broom or scrub brush.		
	V.E.			Rinse bench with water from hose.		
	V.F.			Perform tasks in proper sequence.		
	VI.A.			Mix Soil — bring bag of Pro-mix to bench, using wheelbarrow.		
	VI.B.			Bring perlite from barn.		
	VI.C.			Measure 2½ lbs. of dolomite into clean, empty box, subtracting for weight of box.		
	VI.D.			Lift bag of Pro-mix to bench with help of another person.		
	VI.E.			Cut open bag of Pro-mix with knife.		
	VI.F.			Empty bag onto bench.		
	VI.G.			Sprinkle dolomite on top of Pro-mix evenly.		
	VI.H.			Mix soil by moving dirt across bench with shovel.		

MELWOOD OCCUPATIONAL SEQUENCE LOG

Trainee: ____________ **Crew:** GROWING **Instructor:** ____________

Sequence Number	Objective Number	TEST Dates Scores Pre	 Post	Abbreviated Objective	Instructional Dates Begin	 Finish
	VI.I.			Spread approximately ½ bag of perlite across top of soil.		
	VI.J.			Mix perlite by moving soil across bench with shovel.		
	VI.K.			Work in moisture by moving soil across bench with shovel while instructor wets soil with hose.		
	VI.L.			Perform steps in proper sequence.		
	VII.A.			Mix Rooting Flats — fill wooden flat approximately ½ full with soil mixture.		
	VII.B.			Fill rest of way with perlite.		
	VII.C.			Mix perlite with soil using hands.		
	VII.D.			Perform tasks in proper sequence.		
	VIII.A.			Stick cuttings — fill pot to top with soil.		
	VIII.B.			Brush off excess soil with hand.		
	VIII.C.			Arrange cuttings to be stuck properly.		
	VIII.D.			Place cuttings in soil so that cutting stands up with stem unbroken.		
	VIII.E.			Perform tasks in proper sequence.		
	IX.A.			Pot rooted cuttings — remove cuttings from flat by running fingers underneath cutting.		
	IX.B.			Fill pots with appropriate amount of soil.		
	IX.C.			Place cuttings so they are spaced and facing the same as with uprooted cuttings.		

MELWOOD OCCUPATIONAL SEQUENCE LOG

Trainee: ____________ Crew: GROWING Instructor: ____________

Sequence Number	Objective Number	TEST Dates Pre	TEST Scores Post	Abbreviated Objective	Instructional Dates Begin	Instructional Dates Finish
	IX.D.			Cover root system with soil, not covering stem past previous depth in rooting flat.		
	IX.E.			Level soil with fingers.		
	IX.F.			Settle dirt in pot by gently tapping pot on bench.		
	IX.G.			Perform tasks in proper sequence.		
	X.A.			Repot established plants — turn plant upside down and tap bottom of pot.		
	X.B.			Remove plant from old pot by pulling stem so that soil ball comes out intact.		
	X.C.			Pot plant using same procedure as with rooted cuttings.		
	X.D.			Perform tasks in proper sequence.		

MELWOOD OCCUPATIONAL SEQUENCE LOG

Trainee: ____________________ Crew: PRODUCTION Instructor: ____________________

Sequence Number	Objective Number	TEST Dates Scores		Abbreviated Objective	Instructional Dates	
		Pre	Post		Begin	Finish
	I.A.			Water plants — screw watering wand into proper end of hose.		
	I.B.			Screw water breaker into proper end of wand.		
	I.C.			Turn water on at proper pressure so soil is not washed out of pot.		
	I.D.1.			Test pots and hanging baskets for dryness — by feel.		
	I.D.2.			By sight.		
	I.D.3.			By weight.		
	I.E.			Have hose trace edge of pot so soil will remain level.		
	I.F.			Fill pot to rim with water to assure proper drainage.		
	I.G.			Water all benches first and check for dryness by rows. Then water all dry baskets.		
	I.H.			When watering complete, return all equipment to proper storage area. Turn off hose, remove wand and breaker and store. Hose should be		
				properly coiled below faucet.		
	I.I.			Perform above steps in proper sequence.		
	II.A.			Fertilize plants — check all pots for dryness and water when necessary.		
	II.B.			Empty fertilizing machine of water and any improper fertilizer.		
	II.C.			Weigh proper amount of fertilizer in bucket and add water to dissolve.		
	II.D.			Fill machine properly; close all valves; attach hoses properly; find correct setting after water is running.		

MELWOOD OCCUPATIONAL SEQUENCE LOG

Trainee: ____________ **Crew:** PRODUCTION **Instructor:** ____________

Sequence Number	Objective Number	TEST Dates Scores		Abbreviated Objective	Instructional Dates	
		Pre	Post		Begin	Finish
	II.E.			Fertilize all plants that have been specified for application.		
	II.F.			Fertilize as if watering plants and limiting soil disturbance.		
	II.G.			Identify amount of fertilizer by blue color.		
	II.H.			Turn setting to 0 to clean out and not shut off water until clear water coming out of hose.		
	II.I.			Unhook machine; replace it and other tools in proper storage space.		
	III.A.			Clean plant material — distinguish dead or damaged leaves from good ones by feel and by sight.		
	III.B.			Remove leaves from soil, or if still attached to plant, by pinching off.		
	III.C.			Operate small clippers to remove brown tips from plants.		
	III.D.			Place all damaged plant material into trash can and deposit it in compost pile.		
	III.E.			Perform above steps in proper sequence.		
	IV.A.			Maintain greenhouse from possible infections and weeds — distinguish weeds from foliage plants.		
	IV.B.			Remove weeds properly — pull weeds from base to remove both top and roots.		
	IV.C.			Remove extra soil by shaking plant and then placing weeds into compost pile.		
	IV.D.			Perform above steps in proper sequence.		
	IV.E.			Clean benches by placing all dead plant material, old pots, etc. in flats.		
	IV.F.			Sort pots from plants and soil; place in proper disposal areas.		

MELWOOD OCCUPATIONAL SEQUENCE LOG

Trainee: ____________ Crew: PRODUCTION Instructor: ____________

Sequence Number	Objective Number	TEST Dates Scores		Abbreviated Objective	Instructional Dates	
		Pre	Post		Begin	Finish
	IV.G.			Clean sidewalks by sweeping materials into piles, then placing in trash can.		
	V.A.			Space plants — in straight rows on bench at a specific spacing pattern.		
	V.B.			Hanging pots should be spaced so plants do not touch.		

MELWOOD OCCUPATIONAL SEQUENCE LOG

Trainee: ____________________ Crew: SHIPPING____________ Instructor: ____________________

Sequence Number	Objective Number	TEST Dates	TEST Scores	Abbreviated Objective	Instructional Dates	
		Pre	Post		Begin	Finish
	I.A.			Select pots for sales route — 3'' & 4'' plants — select plants with largest leaves & symmetrical shape.		
	I.B.			Select plants with no brown leaves or holes in leaves.		
	I.C.			Select plants that are not damaged in any way.		
	I.D.			Select plants that are not dry.		
	I.E.			Fill each flat with same variety of plant to its fullest.		
	I.F.			Carry flat to truck.		
	I.G.			Set flat down on ground with other flats to be loaded.		
	I.H.			Perform steps in proper sequence.		
	II.A.			Carry plants to or from truck — carry flats carefully so as not to knock plants over.		
	II.B.			Carry hanging baskets with arms raised at elbow.		
	II.C.			If carrying more than one basket in each hand, lift foliage of top plant above pot edge; insert hanger of		
				second plant into soil next to side of the pot.		
	II.D.			Perform steps in proper sequence.		
	III.A.a.			Returning plants — 3'': locate bench with variety being returned.		
	III.B.a.			Place flat on bench.		
	III.C.a.			Leave plants in flat.		

MELWOOD OCCUPATIONAL SEQUENCE LOG

Trainee: ____________________ Crew: SHIPPING Instructor: ____________________

Sequence Number	Objective Number	TEST Dates	TEST Scores	Abbreviated Objective	Instructional Dates	
		Pre	Post		Begin	Finish
	III.D.a.			Perform steps in proper sequence.		
	III.A.b.			Returning plants — 4": locate bench with variety being returned.		
	III.B.b.			Take remaining plants out of flat.		
	III.C.b.			Place plants on bench in straight lines, spaced same as plants already on bench.		
	III.D.b.			Return empty flats to shelves by the truck.		
	III.E.b.			Perform steps in proper sequence.		
	III.A.c.			Returning 5½" hanging baskets — locate area with variety being returned.		
	III.B.c.			Place plant in appropriate manner (under bench, on top of bench, or on a cable).		
	III.C.c.			Perform steps in proper sequence.		
	III.A.d.			Returning 8" hanging baskets — locate area with variety being returned.		
	III.B.d.			Either hang plant on cable with adequate space, or place in a straight line on gravel.		
	III.C.d.			Perform steps in proper sequence.		
	IV.A.			Load Truck — load back shelves first with 8" baskets, making sure to load all of same variety at once.		
	IV.B.			Load them with 3 baskets in each row, maintaining straight rows.		
	IV.C.			Fill shelf with at least 2, sometimes more, varieties (put variegated variety next to solid green).		
	IV.D.			Load 5½" baskets on bottom shelf on right side of truck, 4 baskets in each row, keeping straight rows.		

Appendix 9

BASIC HORTICULTURAL GREENHOUSE PRODUCTION SCHEDULE

The instructor and crew in the Basic Horticultural Greenhouse will be responsible for producing 3" pot plant material that is of a quality which may be readily sold by either the retail or wholesale business components.

In order to do this, good growing techniques must be followed as outlined by the Production Manager. Records of quantities produced or lost (due to disease or error), amounts of fertilizer used and dates applied, and weekly production schedules will be kept by the B.H. Instructor and copies will be given to the Production Manager. Since the B.H.G. is primarily a training greenhouse, it is expected that there will be a higher rate of loss due to the inexperience of those being trained.

Listed below is a general outline of varieties of plants that are to be produced by the B.H.G. crew, methods of production, and general quantities to be produced. It should be understood that this schedule can be changed at any time at the discretion of the Production Manager.

I. Plant material to be produced continuously (direct stick cutting unless otherwise noted)

   A. Aluminum plant
   Pilea cadierei
      1. Tip cutting 2 - 3".
      2. Two cuttings per pot.

   B. Artillery plant — Pilea
   microphylla & macrophylla
      1. Tip cutting 3 - 4".
      2. Three cuttings stuck as a ground in the center of the pot.
      3. Once rooted may be grown under benches.

   C. Baby Tear — Helxine
   soleirolii.
      1. One inch "plug" inclusive of roots.
      2. Insert one plug per pot — *do not* cover leaves with soil.
      3. *Do not* allow to dry.
      4. Primarily a fall through spring crop.
      5. Grow under benches.

   D. Cactus/Succulents — assorted varieties
      1. Propagate by tip, stem, leaf, or side shoot cuttings.
      2. Soil should contain ⅓ sand or perlite.
      3. Grow in full sun.

E. Coleus — C. rehneltianus variety

1. Seedling or tip cutting 2 - 3".
2. Two seedlings or cuttings per pot.
3. Due to rapid growth, pinch as needed leaving two nodes.

F. Creeping Charlie — Pilea nummulariifolia

1. Tip cutting 2 - 3".
2. Three per pot.
3. May be grown under benches once rooted.

G. Cupid peperomia — Peperomia scandens

1. Tip cutting 2 - 3".
2. Three cuttings per pot.
3. Allow to dry slightly as tend to rot at base of stem.

H. Exotics — assorted unusual or new varieties

1. Propagation will be unique for each variety.

I. Jade (miniature and regular) — Crassula argentea

1. Tip cutting 2 - 3". Include any leaves that may fall off.
2. One per pot.
3. Soil should contain ⅓ sand or perlite.
4. Allow to dry slightly.

J. Jews —

1. Flowering Inch — Tradescantia blossfeldiane
   a. Tip cutting 3".
   b. Two per pot.
2. Tricolor-Zebrina pendula (also Silvery Jew)
   a. Tip cutting 2 - 3".
   b. Three or four per pot.
3. Tahitian bridal veil-Gibasis geniculata
   a. Tip cutting 3".
   b. Five grouped and stuck in center of pot.
4. Teddy Bear — Cyanotis kewensis
   a. Tip cutting 2 - 3".
   b. Four per pot.
5. All jews may be grown under benches once rooted.

K. Piggyback — Tolmiea menziesii

1. Leaf cutting with young plant already present.
2. Two per pot.
3. *Do not* allow to dry.
5. May be grown under benches.

L. Purple passion — Gynura Sarmentosa

1. Tip cutting 2 - 3"; must not have a woody stem.
2. Two per pot.
3. Will wilt drastically; keep moist.
4. Full sun.

M. Spiders — Chlorophytum comosum

1. Pups taken from runner must have roots present.
2. Two per pot.

N. Swedish Ivy — Plectranthus australis and purpuratus (black)
   1. Tip cutting 2 - 3".
   2. Three per pot.
   3. Maintain close growth by pinching as needed.

O. Troutleaf begonia — Begonia Medora
   1. Tip cutting 2 - 3".
   2. Two per pot.
   3. May be grown under benches.

P. Watermelon begonia — Pellionia daveauana
   1. Tip cutting 2 - 3".
   2. Two per pot.
   3. May be grown under benches.

Q. Wax begonia — B semperflorens vars
   1. Seedlings
   2. Two ¼ inch bunches per pot.
   3. Fertilize half as often as foliage plants.

R. All above plant material
   1. Maintain 2 to 3 salable flats of each variety at all times. There should be all stages of growth present (from just stuck to finished products).
   2. If become over grown.
      a. Shift to next appropriate size and move to production house.
      b. Throw out in extreme cases after consulting Production Manager.
   3. Fertilize
      a. *Only* if rooted.
      b. April - November, once a week.
      c. December - February, every other week.
      d. *Do not* fertilize dry plants (will burn roots).
   4. Temperatures
      a. Daytime — 72 - 75°
      b. Night — 62 - 64°

Appendix 10

SOURCES OF INFORMATION

ASSOCIATIONS

American Association of Nurserymen, Inc.
230 Southern Building
15th & H Streets, N.W.
Washington, D.C. 20005

Bedding Plants Incorporated
P.O. Box 286
Okemos, MI 48864

Garden Centers of America
230 Southern Building
15th & H Streets, N.W.
Washington, D.C. 20005

Professional Grounds Maintenance Association
19 Hawthorne Avenue
Pikesville, MD 21208

American Horticulture Society, Inc.
Mount Vernon, VA 22121

Better Lawn & Turf Institute
Route 4 — Kimberdale
Maryville, OH 43040

National Council for Therapy and Rehabilitation through Horticulture
Mount Vernon, VA 22121

Society of American Florists
901 North Washington Street
Alexandria, VA 22314

PUBLICATIONS

Florists' Review
310 South Michigan Avenue
Chicago, IL 60604

American Nurseryman
310 South Michigan Avenue
Chicago, IL 60604

Southern Florist & Nurseryman
120 St. Luke Avenue
Fort Worth, TX 76101

Plants Alive
2100 North 45th
Seattle, WA 98103

Grounds Maintenance
9221 Quivera Road
P.O. Box 12901
Overland Park, KS 66212

Lawn & Garden Marketing
9221 Quivera Road
P.O. Box 12901
Overland Park, KS 66212

Pacific Coast Nurseryman & Garden Supply Dealer
832 South Baldwin Avenue
Arcadia, CA 91006

Nursery Business
P.O. Drawer 77
Elm Grove, WI 53122

Landscape Industry
P.O. Drawer 77
Elm Grove, WI 53122

American Vegetable & Greenhouse Grower
Willoughby, Ohio 44094

Grower Talks
George J. Ball, Inc.
P.O. Box 335
West Chicago, IL 60185

Home & Garden Supply Merchandiser
2501 Wayzata Blvd.
Minneapolis, MN 55440

Extension Circulars, Bulletins, Fact Sheets and Leaflets are available from local county extension offices and from bulletin offices at the landgrant institutions (College of Agriculture) in your state.

RESOURCES

The Small Business Reporter
Bank of America
Department 3120
P.O. Box 37000
San Francisco, CA 94137
  a. Business Profiles
  b. Business Operations

Ball Red Book
George Ball Company
West Chicago, IL 60185
Production of Bedding Plants

Small Business Administration
Publications
  Management Aids
  Technical Aids
  Small Marketers' Aids
Regional offices located in major cities

Wyman's Gardening Encyclopedia
Donald Wyman
The Macmillan Company
New York, NY 10022

Environmental Plant Production and Marketing
Tokuji Furuta
Cox Publishing Company
832 S. Baldwin Avenue
Arcadia, CA 91006

Directory of American Horticulture
The American Horticulture Society
Mount Vernon, VA 22121

Care and Handling of Flowers and Plants
Society of American Florists
901 N. Washington Street
Alexandria, VA 22314

Gardening Illustrated
150 Concepts
Miriam and Lou Berninger
NASCO, Fort Atkinson, WI 53538
Training new personnel

Greenhouse Operation and Managment
Paul V. Nelson
Reston Publishing Company, Inc.
11480 Sunset Hills Road
Reston, VA 22090

CORRESPONDENCE COURSES

Independent Study
University of Wisconsin-Extension
432 N. Lake Street
Madison, WI 53706

Correspondence Courses in Agriculture
202 Agriculture Education Bldg.
The Pennsylvania State University
University Park, PA 16802

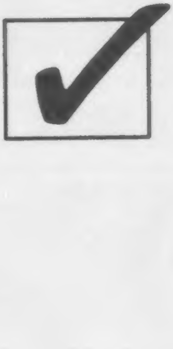
Appendix 11

SAMPLE
GROUNDS MAINTENANCE CURRICULUM

The sample grounds maintenance curriculum records goals to be worked on and the attainment of those goals in the three areas of grounds maintenance task skills, use of hand tools, and use of power equipment. The grounds maintenance tasks are listed in order from least difficult to most difficult; the lists of tools and power equipment are in no particular order.

The grounds curriculum chart is divided into three levels which may be defined and used by the individual program as best suits training or co-op program needs. For example, a work co-op might assign Level 1 to be reached in 3 months, Level 2 to be reached within 1 year, and Level 3 to be reached by a worker who is ready for competitive community employment.

The numerical code relates to the code key provided with each of the three areas. The first square gives the level to be reached and the date the task is started (DTS). The second square is filled in with the date the task is completed (DTC). Room is provided for the trainee/worker and instructor/foreman to initial both dates.



SKILLS

PROFICIENCY CODE KEY

Task Performance Levels (TPL)

1 = Can do simple parts of the task. Needs to be told or shown how to do most of the task.
(EXTREMELY LIMITED)

2 = Can do most parts of the task. Needs help only on hardest parts. May not meet local demands for speed or accuracy.
(PARTIALLY PROFICIENT)

3 = Can do all parts of the task. Needs only a spot check of completed work. May not meet local demands for speed or accuracy.

4 = Can do all parts of the task. Needs only a spot check of completed work. Meets minimum local demands for speed and accuracy.
(COMPETENT)

5 = Can do the complete task quickly and accurately. Can tell or show others how to do the task.
(HIGHLY PROFICIENT)

Task Knowledge Levels (TKL)

1 = Can name parts, tools, and simple facts about the task.
(NOMENCLATURE)

2 = Can name the steps in doing the task and tell how each is done.
(PROCEDURES)

3 = Can explain why and when the task must be done and why each step is needed.
(OPERATING PRINCIPLES)

4 = Can predict, identify and resolve problems about the task.
(COMPLETE THEORY)

NAME: ____________

SKILLS

ACTIVITY	LEVEL 1		LEVEL 2		LEVEL 3	
PICKING UP TRASH	3/2 DTS	TPL/TKL / DTC	3/3 DTS	TPL/TKL / DTC	4/3 DTS	TPL/TKL / DTC
RAKING LEAVES	2/1 DTS	TPL/TKL / DTC	3/3 DTS	TPL/TKL / DTC	4/3 DTS	TPL/TKL / DTC
MULCHING	2/1 DTS	TPL/TKL / DTC	3/3 DTS	TPL/TKL / DTC	4/3 DTS	TPL/TKL / DTC
TRIMMING	2/1 DTS	TPL/TKL / DTC	3/2 DTS	TPL/TKL / DTC	4/2 DTS	TPL/TKL / DTC
EDGING	1/1 DTS	TPL/TKL / DTC	3/2 DTS	TPL/TKL / DTC	4/3 DTS	TPL/TKL / DTC
WEEDING	2/1 DTS	TPL/TKL / DTC	3/2 DTS	TPL/TKL / DTC	4/3 DTS	TPL/TKL / DTC
SWEEPING SIDEWALKS	3/1 DTS	TPL/TKL / DTC	3/1 DTS	TPL/TKL / DTC	4/2 DTS	TPL/TKL / DTC

NAME: ____________ **SKILLS**

ACTIVITY	LEVEL 1		LEVEL 2		LEVEL 3	
PLANTING BULBS	2/1 DTS	TPL/TKL / DTC	2/2 DTS	TPL/TKL / DTC	3/2 DTS	TPL/TKL / DTC
LAYING SOD	1/1 DTS	TPL/TKL / DTC	2/2 DTS	TPL/TKL / DTC	2/2 DTS	TPL/TKL / DTC
LIMING	2/1 DTS	TPL/TKL / DTC	3/1 DTS	TPL/TKL / DTC	3/1 DTS	TPL/TKL / DTC
FERTILIZING	2/1 DTS	TPL/TKL / DTC	3/1 DTS	TPL/TKL / DTC	3/1 DTS	TPL/TKL / DTC
PRUNING	1/1 DTS	TPL/TKL / DTC	2/1 DTS	TPL/TKL / DTC	2/2 DTS	TPL/TKL / DTC
WATERING	1/1 DTS	TPL/TKL / DTC	2/2 DTS	TPL/TKL / DTC	3/3 DTS	TPL/TKL / DTC
SEEDING	1/1 DTS	TPL/TKL / DTC	2/2 DTS	TPL/TKL / DTC	3/3 DTS	TPL/TKL / DTC

AME: ________________

SKILLS

ACTIVITY	LEVEL 1		LEVEL 2		LEVEL 3	
MOWING	2/1 DTS	TPL/TKL / DTC	3/1 DTS	TPL/TKL / DTC	4/2 DTS	TPL/TKL / DTC
LOADING/UNLOADING TRAILERS	1/1 DTS	TPL/TKL / DTC	3/2 DTS	TPL/TKL / DTC	4/3 DTS	TPL/TKL / DTC

USE OF POWER EQUIPMENT

RATING KEY

Tool Performance/Usage (TP/U)

1 = Extremely limited

2 = Partially proficient

3 = Competent

Tool Maintenance/Safety (TM/S)

1 = Extremely limited

2 = Partially proficient

3 = Competent

NAME: ____________

USE OF POWER EQUIPMENT

TOOL	LEVEL 1		LEVEL 2		LEVEL 3	
BUCKET LOADER	/ DTS	TP&U/TM&S / DTC	/ DTS	TP&U/TM&S / DTC	/ DTS	TP&U/TM&S / DTC
CHAIN SAW	/ DTS	TP&U/TM&S / DTC	/ DTS	TP&U/TM&S / DTC	/ DTS	TP&U/TM&S / DTC
GOOD ALL MOWER	1/1 DTS	TP&U/TM&S / DTC	3/2 DTS	TP&U/TM&S / DTC	3/3 DTS	TP&U/TM&S / DTC
GRAVELY TRACTORS	1/1 DTS	TP&U/TM&S / DTC	3/2 DTS	TP&U/TM&S / DTC	3/3 DTS	TP&U/TM&S / DTC
LAWN BLOWERS	/ DTS	TP&U/TM&S / DTC	/ DTS	TP&U/TM&S / DTC	/ DTS	TP&U/TM&S / DTC
LAWN VACUUMS	/ DTS	TP&U/TM&S / DTC	/ DTS	TP&U/TM&S / DTC	/ DTS	TP&U/TM&S / DTC
POWER EDGER	1/1 DTS	TP&U/TM&S / DTC	2/1 DTS	TP&U/TM&S / DTC	3/2 DTS	TP&U/TM&S / DTC

NAME: ____________ **USE OF POWER EQUIPMENT**

TOOL	LEVEL 1		LEVEL 2		LEVEL 3	
PUSH MOWER	2/1 DTS	TP&U/TM&S / DTC	3/2 DTS	TP&U/TM&S / DTC	3/3 DTS	TP&U/TM&S / DTC
SNOW THROWER	/ DTS	TP&U/TM&S / DTC	/ DTS	TP&U/TM&S / DTC	/ DTS	TP&U/TM&S / DTC
TRACTOR MOWING	/ DTS	TP&U/TM&S / DTC	/ DTS	TP&U/TM&S / DTC	2/1 DTS	TP&U/TM&S / DTC
WEED EATER	2/1 DTS	TP&U/TM&S / DTC	3/2 DTS	TP&U/TM&S / DTC	3/3 DTS	TP&U/TM&S / DTC

USE OF HANDTOOLS

RATING KEY

Tools, Knowledge of (TK)	Tool Performance/Usage (TP/U)
1 = Can name tool by sight	1 = Extremely limited
2 = Can name tool and tell its proper use	2 = Partially proficient
3 = When given a task, groundsman can select proper tool without prompting	3 = Competent

---

NAME: ______________

USE OF HANDTOOLS

TOOL	LEVEL 1		LEVEL 2		LEVEL 3	
AXE	1/1 DTS	TK/TP&U / DTC	3/1 DTS	TK/TP&U / DTC	3/2 DTS	TK/TP&U / DTC
BROOM	3/2 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC
HAND CULTIVATOR	1/0 DTS	TK/TP&U / DTC	3/2 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC
DIGGING BAR	1/0 DTS	TK/TP&U / DTC	3/2 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC
PITCH FORK	1/1 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC
SPADING FORK	1/2 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC
GAS CAN (MIX)	2/1 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC

NAME: ____________

USE OF HANDTOOLS

TOOL	LEVEL 1		LEVEL 2		LEVEL 3	
GAS CAN (STRAIGHT)	2/2 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC
GRASS CLIPPERS	3/2 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC
HEDGE TRIMMERS	3/1 DTS	TK/TP&U / DTC	3/2 DTS	TK/TP&U / DTC	3/2 DTS	TK/TP&U / DTC
HOE, WEEDING	2/1 DTS	TK/TP&U / DTC	3/1 DTS	TK/TP&U / DTC	3/2 DTS	TK/TP&U / DTC
HOSE	3/2 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC
LOPPERS	2/1 DTS	TK/TP&U / DTC	3/2 DTS	TK/TP&U / DTC	3/2 DTS	TK/TP&U / DTC
HAND PRUNERS	2/1 DTS	TK/TP&U / DTC	3/2 DTS	TK/TP&U / DTC	3/2 DTS	TK/TP&U / DTC

NAME: ________________ **USE OF HANDTOOLS**

TOOL	LEVEL 1		LEVEL 2		LEVEL 3	
PRUNING SAW	1/0 DTS	TK/TP&U / DTC	3/2 DTS	TK/TP&U / DTC	3/2 DTS	TK/TP&U / DTC
HARD RAKE	2/2 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC
SOFT RAKE	2/2 DTS	TK/TP&U / DTC	3/2 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC
FLAT SHOVEL	2/2 DTS	TK/TP&U / DTC	3/2 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC
SPADE SHOVEL	2/2 DTS	TK/TP&U / DTC	3/2 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC
POINTED SHOVEL	2/2 DTS	TK/TP&U / DTC	3/2 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC
BROADCAST SPREADER	2/2 DTS	TK/TP&U / DTC	3/2 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC

NAME: ____________________

USE OF HANDTOOLS

TOOL	LEVEL 1		LEVEL 2		LEVEL 3	
DROP SPREADER	2/2 DTS	TK/TP&U / DTC	3/2 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC
SWING BLADE	1/0 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC
WHEELBARROW	3/3 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC	3/3 DTS	TK/TP&U / DTC

Appendix 12

National Industries for the Severely Handicapped, Inc.

4350 East West Highway • Washington, D.C. 20014 • Phone (301) 654-0115

REGIONS	AREAS SERVED		
Northeast			
David S. Greene, Supervisor NISH Northeast Regional Office 225 Park Ave., South 16th Floor New York, New York 10003 (212) 475-6333	Connecticut Maine Massachusetts	New Hampshire Rhode Island Vermont	New Jersey New York Puerto Rico Virgin Islands
Southeast			
Robert C. Hawlk, Supervisor NISH Southeast Regional Office 7830 Backlick Rd., Suite 406 Springfield, Virginia 22150 (703) 569-8888	Alabama Delaware D.C. Florida Georgia	Kentucky Maryland Mississippi North Carolina South Carolina	Pennsylvania Tennessee Virginia West Virginia
North/Central			
Constance J. Shook, Supervisor NISH North/Central Regional Office 1400 East Touhy Ave., Suite 430 Des Plaines, Illinois 60018 (312) 298-5690	Illinois Indiana Michigan Minnesota	Montana North Dakota Ohio	South Dakota Wisconsin Wyoming
South/Central			
Herbert E. Magnusson, Supervisor NISH South/Central Regional Office 805 Avenue H East, Suite 507 D Arlington, Texas 76011 (817) 649-8505	Arkansas Iowa Kansas Louisiana	Missouri Nebraska New Mexico Oklahoma	Texas Arizona* Nevada*

West

Robert C. Rank, Supervisor
NISH West Regional Office
1416 Concannon Blvd.
Livermore, Calif. 94550
(415) 449-1071

Arizona
California
Colorado
Guam
Hawaii
Nevada
Utah

NARI-Northwest Association of Rehab Industries

Kathleen Boos
JWOD Services Analyst/Coord.
Northwest Association of Rehab Industries
1331 3rd Ave., Suite 206
Seattle, Washington 98101
(206) 624-8840

Alaska
Idaho
Oregon
Washington

NAJVS-National Association of Jewish VOC Services

William Bari,
Nat'l Workshop Coord.
Nat'l Assn of Jewish Vocational Services (NAJVS)
225 Park Ave., South 16th Floor
New York, New York 10003
(212) 475-2400

All NAJVS affiliated workshops nationwide.

*Temporarily provides technical assistance to these states.

Appendix 13

SAMPLE
GROUNDS MAINTENANCE CONTRACT

CONTRACT FOR CONSTRUCTION SITE CLEAN UP

FOR

____

THIS AGREEMENT, made this ______________________ by and between the ________________________________, hereinafter called CONTRACTOR, and ________________________________, party of the second part, hereinafter called ______________________________.

WITNESSETH:

That the CONTRACTOR and the ____________________________ for the consideration of the convenants, conditions and agreements herein contained to be kept and performed by the parties hereto, do hereby agree together as follows:

ARTICLE I

The CONTRACTOR agrees to furnish any and all labor, equipment and tools to complete the work as described in the specifications and conditions entitled "General Specifications."

The said attachment, to wit, "General Specifications", is hereby incorporated into and made a part of this agreement.

All work performed shall be of high quality in accordance with good practices, procedures, and industry standards.

THIS AGREEMENT may be cancelled by either party giving thirty (30) days written notice to the other party of its intention to cancel.

ARTICLE II

THIS AGREEMENT SHALL COMMENCE as of ____________________ and remain in effect for ________________ months, unless cancelled by written notice. All work under the terms of this contract will be performed during this period.

ARTICLE III

The ______________________ agrees to pay the CONTRACTOR monthly for services performed therein as specified in "General Specifications." Payment to be made 30 days after receipt of CONTRACTOR'S invoice.

ARTICLE IV

It is agreed and understood that the ______________________ shall not be obligated to make any payment hereunder in addition to the amount specified under the terms of the "General Specifications" for extra work, unless such extra or additional work and the price to be paid therefore shall be authorized in writing by the ______________________.

ARTIVLE V

CONTRACTOR shall assume all liability to CONTRACTOR'S employees under the Workmen's Compensation Laws of the State of Maryland and will insure CONTRACTOR'S liability in accordance with the provisions of said laws unless CONTRACTOR shall be exempt by the proper authorities from carrying such insurance.

ARTICLE VI

It is understood and agreed that in the performance of this agreement, the CONTRACTOR shall be, and remain, in all respect an independent contractor, and CONTRACTOR shall hold ______________________ harmless from and indemnify it against any and all claims, demand, and suits for violation of any ordinance, statute of regulation, or for injury or damage to any person, or persons, or property whatsoever, including death, arising or resulting from the performance of the work covered by this agreement, and from and against all claims, liens, or all responsibility and liability in any and all of said contingencies and will defend on behalf of ______________________ any suits brought jointly against CONTRACTOR and ______________________ or against ______________________ alone for or arising out of any of the aforesaid causes. The above described responsibility of CONTRACTOR will include, but not be limited to, responsibility to third parties.

ARTICLE VII

THE CONTRACTOR shall at his own expense provide at all times during the performance of the work hereunder, Public Liability Insurance with the following coverage:

Bodily Injury:	$250,000 per person
	$500,000 per person
Property Damage:	$100,000 per accident

As will protect the CONTRACTOR and the ______________________ jointly or separately from any claims for damage for personal injury, including death, and from claims for damage for property damage, which may arise in or resulting from the performance of the work covered by this agreement. A duplicate copy of such insurance shall be filed with the ________________ and shall be subject to the AHC-5 approval for adequacy of protection.

ARTICLE VIII

It is understood and agreed that since the relationship between the parties hereto is that of principal and independent contractor, the CONTRACTOR hereunder assumes full responsibility for compliance where necessary under the law, with any and all Federal, State or Municipal laws, ordinance and regulations, including (but not limited to) those having to do with the employment of labor, hours of labor, working conditions and payment of wages, together with all benefits, taxes or other duties collectible from employees under applicable provisions of law.

ARTICLE IX

CONTRACTOR will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. CONTRACTOR will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex or national origin. Such action shall include but not be limited to the following: Employment, upgrading, demotion, or transfer, recruitment advertising, and selection for training. CONTRACTOR agrees to post in a conspicuous place, available to employees and applicants for employment, notices to be provided by the contracting office setting forth the provisions of the nondiscrimination clause.

IN WITNESS WHEREOF, the CONTRACTOR and the ________________ for themselves, their heirs, executors or administrators, successors and assigns have caused this agreement to be executed on this day __________.

____ ____________
Representative — Date

____ ____________
Representative — Date

GENERAL SPECIFICATIONS

I. Crew provided by CONTRACTOR will consist of approximately five crew members and a foreman.

II. CONTRACTOR will provide a dump truck for hauling of trash materials and the tools and equipment to complete various jobs assigned.

III. CONTRACTOR'S crew will work for ______________________ two days per week, 6 hours per day and the rate of pay for said employment will be $180.00 per day. Specific days of the week to be worked will be flexible and determined by mutual agreement by CONTRACTOR and ____________. Notification for day of week to be given 1 week in advance. Notice of work location to be given 24 hours in advance.

IV. Work to be undertaken by the crew will be designated by ____________ and may include trash removal, moving and spreading of soil and clean up of completed structures. Also grass mowing. CONTRACTOR to provide equipment.

V. Geographic Area: ____

VI. Standard two days to be Monday and Tuesday each week, subject to mutually agreed changes by week to accommodate specific work requirements.